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Beyond Orphanhood: Family Structure and Child Health in Tanzania

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Princeton, NJ : Princeton University

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BEYOND ORPHANHOOD: FAMILY STRUCTURE AND CHILD HEALTH IN TANZANIA

Lauren Michele Gaydosh

A DISSERTATION

PRESENTED TO THE FACULTY

OF PRINCETON UNIVERSITY

IN CANDIDACY FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

RECOMMENDED FOR ACCEPTANCE

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Abstract

Children in Tanzania commonly live apart from their parents for a variety of reasons. Yet we know surprisingly little about this consequential social arrangement and its impact on children's health. Existing studies, while illuminating, focus almost exclusively on the phenomenon of AIDS orphanhood. Furthermore, the research tends to focus on the negative consequences of particular family structures resulting from specific causes of parental absence. This project improves upon the existing scholarship by broadening our view of the family and parental absence through an examination of multiple causes of absence beyond orphanhood.

This dissertation project draws on quantitative, longitudinal data and original qualitative in-depth interview data collected in the Rufiji Health and Demographic Surveillance System (HDSS) in Tanzania to examine the causes and consequences of parental absence. This dissertation is divided into three empirical chapters. The first chapter uses demographic data to estimate children's risk of experiencing parental absence by cause and examine predictors of this risk. Using the same longitudinal data, the second chapter examines the consequences of parental absence for child mortality. The third and final empirical chapter relies on original qualitative interview data to investigate ideal childrearing arrangements and strategies employed to approximate this ideal when it is unattainable.

As families in Tanzania respond to a constellation of contemporary demographic, social and cultural changes, it is important to understand the implications of such changes for children's living arrangements and health. The results are relevant not only for this particular geographic locale, but for scholars and policymakers in other countries interested in improving children's welfare in the face of social and demographic changes that challenge traditional family forms.

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refer to the POP 509 notes throughout my career, and his website will forever be in my browser bookmarks.

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Thank you.

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Chapter 1:

Introduction: Beyond Orphanhood

1.1 Introduction

Between the AIDS crisis and the more recent Ebola outbreak in sub-Saharan Africa, the hardships of children left behind after their parents' death have become increasingly visible (Fay Greene 2002; Gettleman 2014). Starting in the late 1980s and throughout the 1990s and early 2000s, as prime age adult mortality climbed, there was widespread concern in the popular press, policy circles, as well as among academic researchers, as to whether the African extended family would be able to support rising numbers of AIDS orphans (Deininger et al. 2003; Fay Greene 2002; Foster 2000; Hunter 1990). Moreover, an accumulating body of evidence documented the troubling finding that, in general, orphans fare worse than their peers with living parents across a variety of domains (Beegle et al. 2006; Case et al. 2004; Evans and Miguel 2007; Lindblade et al. 2003).

While orphanhood certainly remains a crucial concern, parental absence in the region is not only the result of death; parents may live apart from their children for a variety of other reasons, namely marriage-related (such as divorce or remarriage), migration, and child fostering. Demographers and anthropologists have long documented the fluidity of marriage in the region, and the AIDS epidemic may have contributed to an increase in divorce (Reniers 2003). Migration has also been common in the region for decades (Posel et al. 2006; Tacoli 2001; Tienda 2006). With rapid urbanization, rural-rural and rural-urban internal migration predominate over international flows (Oucho 1998). Finally, child fostering has long been a

coping strategy for households facing severe resource constraints, as well as a strategy of redistribution across households (Goody 1982; Hampshire et al. 2014; Leinaweaver 2014).

While the evidence demonstrates that orphans face considerable disadvantage, other forms of parental absence may actually create opportunities that promote child wellbeing. Yet despite the multiple reasons for parental absence and their potential variable impact, we know remarkably little beyond the case of orphanhood. In this project, I argue that a narrow focus on the death of biological parents to the exclusion of alternative causes of parental absence obscures children's varied experiences of family structure. I explore the complexity of parental absence in an attempt to provide a more comprehensive understanding of family structure and children's welfare.

To do so, I focus on Tanzania and draw on quantitative, longitudinal data and original qualitative in-depth interview data collected in the Rufiji Health and Demographic Surveillance System (HDSS). The project is divided into three components designed to capture the process of absence. The first uses demographic methods to estimate the prevalence, cause composition and risk factors associated with absence. The second uses survival analysis to examine the association between different types of absence and child mortality. The third investigates the ideals of childrearing living arrangements and economic support in the presence and absence of biological parents using original qualitative interview data. The goal of this project is to put orphanhood into a broader context by examining it as one case among multiple forms of parental absence.

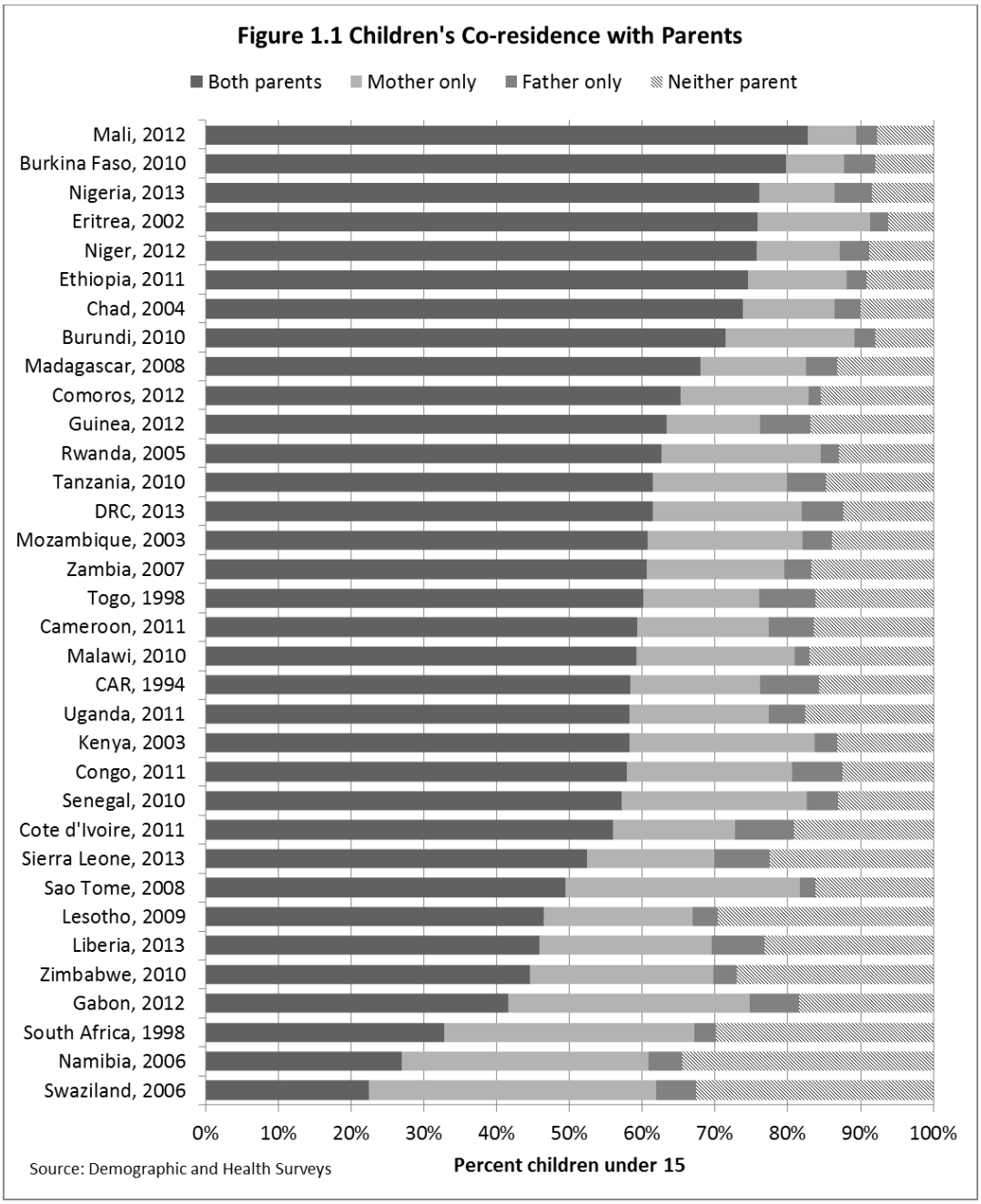
It is particularly important to understand the varied experiences of children in sub-Saharan Africa, as 40% of the world's children will live in the region by 2050. Over half of Tanzania's population is under the age of 18, an age structure common in countries across the

region and the developing world. As fertility declines, countries in the region are poised to take advantage of the demographic dividend, wherein the large population of youth progresses into productive ages, driving economic development. However, the ability of these countries to capitalize on this demographic advantage will depend on the welfare of the current youth population. Family structures and parental absence are consequential for child development and well-being, and have long-lasting effects into adulthood. If children are not supported today, they will be ill-equipped to help the country develop in the future.

1.2 Parental Absence: Common and Consequential

Parental absence in sub-Saharan Africa is widespread, with children commonly living apart from one or both of their parents. Figure 1.1 presents the living arrangements of children using data from the most recent round of Demographic and Health Surveys across sub-Saharan Africa. For reference, in the United States just under 70% of children live with both parents (Vespa et al. 2013). These cross-sectional estimates present the percent of children living with both parents, with the mother only, the father only, and with neither parent.

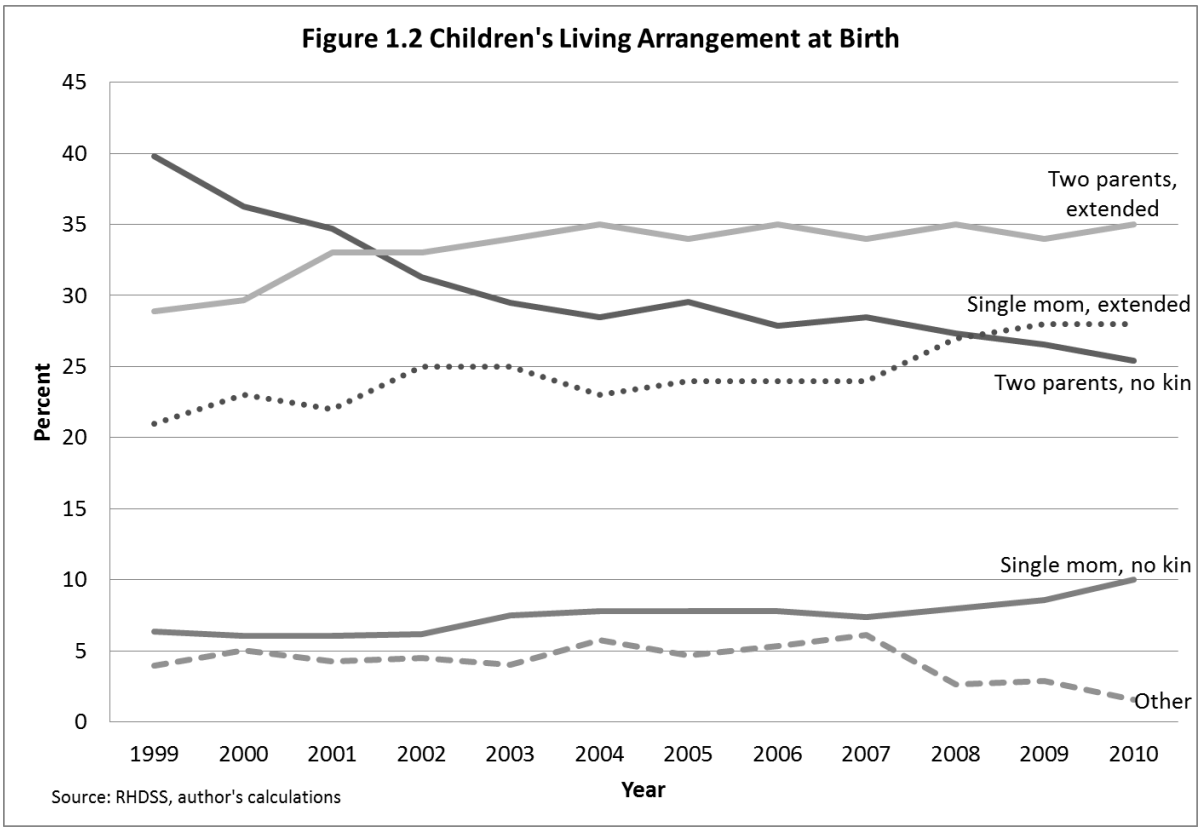
The data are sorted in descending order of the share of children living with both parents, represented in dark grey. Across the region, recent estimates of the percent of children living with both parents range from a high of 83% in Mali, to a low of 22% in Swaziland. Tanzania, the country of study, falls somewhere in the middle, with 62% of children living with both parents, 18% living with the mother only, 5% with the father only, and 15% living with neither parent.



While these cross-sectional estimates demonstrate the range and magnitude of absence across the region, such snap-shot measures are unable to tell us about children's dynamic experience of absence, and may underestimate the experience, as children who move in and out of living with parents are not necessarily captured. Furthermore, while the Demographic and Health Surveys do have data on the vital status of the parent, the data are unable to differentiate

between causes of parental absence other than death. In Chapter 2, this project presents cause-specific estimates of children's experience of parental absence, investigating the relative contribution of marriage-related absence, migration, death, and child fostering.

In addition to a preoccupation with parental death as a cause of absence, the literature on family structure in Africa also tends to focus on biological parents, particularly mothers (Madhavan et al. 2012; Page 1989; Parker and Short 2009). While parental absence has been demonstrated to influence child outcomes, in this context children are likely to live with other family members in addition to, or in the absence of, biological parents (Caldwell and Caldwell 1987; Cox and Fafchamps 2007; Eloundou-Enyegue and Shapiro 2005; Sear and Mace 2008). In a context of shared childrearing and extended family, as in Tanzania, care for children is not restricted to the parents. So the exit of a parent does not necessarily result in a loss of caregiving and may alter the ways in which parental absence is associated with child outcomes. Indeed, as we see in Figure 1.2, while parents are the focus of many analyses of family structure, children actually live with a variety of other individuals. Figure 1.2 presents the percent of children in a given family structure at birth by year in the Rufiji HDSS. The proportion of children living in two parent, nuclear families with no co-resident extended kin (in dark grey) has been declining, from roughly 40% in 1999 to around 25% in 2010. Indeed, in 2010, the most common family structure at birth was a two parent, extended family (in light grey), followed by a single mother extended family (in the dotted line). Notably, single motherhood in both extended and non-extended families is increasing.



Parental absence is also consequential, with important implications for child welfare. However, the consequences of absence likely depend on the reason for absence, making a cause-specific analysis essential. Absence due to different causes may present distinct opportunities or challenges, with different implications for child wellbeing. Indeed, there is some recent empirical evidence from sub-Saharan Africa that moves beyond orphanhood to consider migration and marriage-related reasons for absence, and demonstrates such heterogeneity in outcomes. Findings on paternal migration demonstrate that children of migrant fathers have better educational outcomes than their peers with co-resident fathers (DeRose et al. 2014; Yabiku et al. 2012), while research on divorced mothers indicates that children have lower school enrollment than children of married mothers (Chae 2013). In Chapter 3, this project considers the consequences of different causes of parental absence for child mortality, investigating the role of extended kin in addition to biological parents.

1.3 Research Setting

Settled along the flood plains of the Rufiji River for which it is named, the research setting is mainly rural, with 80% of households having a dirt floor, 90% using water from a shared source (usually a community well), and 95% using a traditional pit latrine. Subsistence farming is the primary occupation. While rural, the population is concentrated around four trading centers or townships. The trading centers are located along a main road, which leads to Dar es Salaam, the country's largest city and commercial capital. The 180km journey to Dar es Salaam costs about 30 cents by bus and takes roughly 4 hours. Migration in and out of the area is almost entirely internal rather than international, with a majority to Dar es Salaam or other Tanzanian cities. There is limited migration to neighboring Mozambique and Kenya.

The area's population is largely Muslim and comprised of three dominant ethnic groups who follow a patrilineal kinship system, with lineage traced through the father. The patrilineal kinship system influences patterns of living arrangements in important ways, particularly in the event of parental absence. When a woman marries her husband, she usually moves to his family village. The children who are born to the couple are considered to belong to the father and his family, so that in the event of their divorce, the children are expected to stay with the father. Exceptions are made for particularly young children, but once they are weaned and can feed and bathe themselves, they often move back to the father's residence. If they stay with their mother, they will usually remain with her only until she remarries, because the new husband is often unwilling to care for them. Marriage is formalized through payment of a brideprice and solidified with the birth of the first child. Polygyny is permitted. Children born outside of marriage may be acknowledged by the unmarried father by payment of damages to the woman's family. Fathers may also deny paternity.

The population in the Rufiji HDSS can be characterized as in the midst of demographic transition, with high but declining fertility with a total fertility rate of approximately 5, and high but improving mortality with a life expectancy at birth of approximately 65. The leading causes of death for children are malaria, febrile illness, pneumonia, and malnutrition. For adults, the leading causes of death are malaria, tuberculosis and HIV/AIDS related causes, and cardiovascular disease. Educational attainment is low, despite universal primary education. Children often do not start primary school until the age of 7, sometimes due to the long distances between home and school.

In resource constrained countries such as Tanzania, there are no vital or national registration systems. In an effort to calculate vital statistics such as birth and death rates, and to monitor health, demographic surveillance systems were established throughout the developing world (Sankoh and Byass 2012; Ye et al. 2012). Under this data collection strategy, the dates of all vital events within a given catchment area are recorded. This includes all births, deaths, migration and marital events. The Rufiji HDSS is an ongoing platform that follows an open cohort of approximately 110,000 individuals living in an area of 1,800 square kilometers (Mrema et al. 2015). In 1998, there was an initial census of all individuals living in the area. Subsequently, households are visited three times every year, with new members added through birth or in-migration, and members exiting through death or out-migration. I use these demographic data for the analyses conducted in Chapters 2 and 3. In Chapter 4, I rely on original qualitative interview data collected with individuals residing in the surveillance site.

1.4 Chapter Outline

The dissertation makes three main contributions. First, the majority of scholarship and policy programming on parental absence in sub-Saharan Africa focuses on orphanhood due to parental death, often as a result of AIDS related mortality. As a result, we know very little about other reasons for absence. In addition to death, the dissertation examines absence due to union formation and dissolution, migration, and child fostering. Second, by examining multiple causes of absence simultaneously, the project provides a unique window into the processes leading to absence and a better understanding of the distinctiveness and similarity of these processes. Finally, the domestic and international research on parental absence tends to focus on the negative consequences of particular family structures resulting from specific causes of parental absence. This research considers the potential positive along with negative effects of parental absence for child health.

Chapter 2: Childhood Risk of Parental Absence in Tanzania[1]

In the first empirical chapter of the dissertation I estimate how often and for what reasons parents are absent from their children. Parental absence is common, and in particular, children born to single mothers face a very high risk of maternal absence. For children born into two-parent families, roughly one quarter of children experience maternal absence and 40% experience paternal absence. Children born to single mothers face a much higher risk of maternal absence, with 70% experiencing separation from the mother. Using a competing risks framework, I decompose this overall risk into estimates by cause, providing the first estimates of the cause-specific risk of parental absence in an African context. I find that, despite the emphasis on

[1] A version of Chapter 2 has been accepted on March 13, 2015 for publication in *Demography*. This is a pre-print of the published article, which was pre-released online on July 29, 2015 (DOI 10.1007/s13524-015-0411-4). Results from this chapter have also been presented at the 2013 Annual Meeting of the Population Association of America in New Orleans and the 2014 Annual Meeting of the American Sociological Association in San Francisco.

orphanhood in the research and policy communities, most parental absence is not due to parental death. Indeed, the marriage-related causes of divorce and remarriage account for the greatest share of maternal absence, while child relocation accounts for most of paternal absence. For children born to single mothers, maternal migration is the leading cause of maternal absence. We must recognize, however, that although parental death is the least common cause of absence, the experience of orphanhood is distinct, in that it results in the complete absence of parental support. However, as these children are typically viewed as vulnerable in terms of program eligibility, they may actually be able to access additional support that is not available to children with parents who are absent for other reasons. Again, further research is needed to better understand the consequences of different types of absence. Finally, the characteristics associated with the risk of absence vary depending on the cause of absence, the parent under consideration, and the household structure at birth

Chapter 3: Parental Absence, Kin Presence, and Child Mortality in Tanzania[2]

The second empirical chapter examines the influence of parental and kin co-residence on child mortality. This chapter answers three research questions. First, is parental absence associated with child mortality, and does this association depend on which parent is absent and the cause of absence? I find that both maternal and paternal absence are associated with higher child mortality, with the exception of fathers who are married to the mothers at birth but are not co-resident. Children born to this particular type of migrant father have a lower risk of death than children born to co-resident fathers. All causes of maternal absence are associated with higher child mortality, whereas only paternal migration is associated with higher child mortality. Second, is the presence of extended kin associated with child mortality, and does this association

[2] Results from this chapter have been presented at the 2015 Annual Meeting of the Population Association of America in San Diego.

depend on the type of kin? I find that the co-residence of any kin is associated with higher child mortality, but that this association is being driven by vertically extended kin, or adults in the generation above the child's parents. Third, and finally, is the association between parental absence and child mortality moderated by the presence of extended kin? I find that lateral kin are able to moderate the association between child mortality and parental absence, but only for maternal absence. This chapter contributes to family sociology and demography by investigating the influence of parental absence in a context of shared childrearing, differentiating between types of absence and kin ties.

Chapter 4: Childrearing Ideals in Tanzania

Finally, the third empirical chapter draws on original qualitative interview data to examine the ideals of childrearing with respect to living arrangements and economic support. Over the course of 18 months in residence in Tanzania, I collected 58 in-depth interviews with the parents and extended family of 21 index children. This chapter examines the childrearing arrangements in different family structures with parents present and absent for a variety of reasons. This chapter explores the expectations, roles, obligations and entitlements of parents and extended kin regarding childrearing. The chapter addresses three research questions. First, what do individuals view as the ideal childrearing arrangement? I find that even though extended kin are expected to be intimately involved in childrearing, respondents still view the care of two biological parents as ideal. Second, when parents are unable to achieve this ideal, what is the preferred childcare arrangement? I find that, ideally, extended kin are expected to care for children when parents are unavailable, but the response varies depending on the cause of absence. Finally, when parents must be absent, what strategies do they employ to approximate the two-parent ideal and maintain relationships with their children? Absent parents make regular contact with children, including

temporary visits or stays, living nearby, and sending food and money. The qualitative results provide a deeper understanding of the lived experience of parental absence. Furthermore, the results underscore the importance of examining different causes of absence, as ideals of childrearing shape moral differentiations depending on the reason for parental absence.

By combining quantitative demographic data and qualitative interview data, this dissertation provides a broader window into the family and demographic processes shaping the welfare of children in Tanzania. The results of this project move beyond orphanhood to consider multiple vulnerabilities and advantages presented by parental absence and the variety of extended kin response. The results are relevant not only for this particular geographic locale, but for scholars and policymakers in other countries interested in improving children's welfare in the face of social and demographic changes that challenge traditional family forms.

Chapter 2:

Childhood Risk of Parental Absence in Tanzania[3]

2.1 Introduction

Children in sub-Saharan Africa commonly live apart from one or both of their parents. Across the region, recent estimates of the percent of children not living with either parent range from a low of 8% in Mali to a high of 30% in Swaziland (Cellule de Planification et de Statistique et al. 2014; Central Statistical Office Swaziland and Macro International Inc 2008). In Tanzania, the country of study, 13% of children do not live with either parent (National Bureau of Statistics and ICF Macro 2011). Yet children's experiences are varied, resulting in part from different reasons, timing, duration and frequencies of parental absence. With rapid urbanization, increasing levels of development and sustained high levels of adult mortality, parental absence reflects a constellation of forces influencing mortality, migration, and marital practices.

Parental absence is not only common, it is also consequential, with both immediate and long-term implications for child wellbeing. Indeed, much of the existing literature focuses on the impact of parental absence, particularly parental death. With some exceptions (Deininger et al. 2003; Lindblade et al. 2003), the literature finds negative consequences of orphanhood across a variety of domains. Orphans have higher morbidity (Ainsworth and Semali 2000; Birdthistle et al. 2008), higher mortality (Clark et al. 2013; Nakiyingi et al. 2003), worse educational outcomes (Ardington and Leibbrandt 2010; Beegle, De Weerdt, et al. 2010; Case et al. 2004; Case and Ardington 2006; Evans and Miguel 2007; Kidman et al. 2012), earlier sexual debut (Palermo and

[3] A version of this chapter has been accepted for publication in *Demography*. This is a pre-print of the published article: Gaydosh, L. (2015). Childhood Risk of Parental Absence in Tanzania. *Demography*, 52(4). DOI 10.1007/s13524-015-0411-4

Peterman 2009), and are more likely to migrate (Ford and Hosegood 2005; Madhavan et al. 2012) than their counterparts with living parents. Beyond orphanhood, there is an emerging literature that investigates the consequences of marriage-related absence for children, with recent findings indicating that children of divorced mothers have higher mortality (Clark and Hamplová 2013) and lower school enrollment (Chae 2013) than children of married mothers. Moreover, family instability in general is associated with earlier transitions to adulthood, although the reasons for temporary separation are unknown (Goldberg 2013; Marteleto et al. 2012).

Note that in examining parental absence it is often assumed that the absence of a parent results in a loss of resources and is therefore deleterious for children. However, in a context of shared childrearing the absence of parents may be less consequential, as children are commonly cared for by relatives or kinsmen who can buffer against the negative consequences of parental absence (Case and Ardington 2006; Castle 1995; Goody 1982; Parker and Short 2009). Indeed, such fostering practices often benefit both sending parents and recipient families, equalizing inequalities and promoting mobility (Bledsoe and Isiugo-Abanihe 1989; Eloundou-Enyegue and Shapiro 2005; Eloundou-Enyegue and Stokes 2002; Goody 1982; Lockwood 1998; Page 1989; Serra 2009). Depending on the cause, the absence of a parent may actually present an opportunity for greater resources and advantages (DeRose et al. 2014; Isiugo-Abanihe 1985; Townsend et al. 2006) . Parental non-residence does not necessarily indicate a complete lack of involvement; absent parents remain in contact with their children and caretakers, sending support and remittances (Bachan 2014; Luke and Singh 2011; Madhavan et al. 2014). Indeed, in contrast to the generally negative consequences of absence due to death and marriage-related causes, there is evidence that parental migration, particularly paternal, is beneficial for children (DeRose et al. 2014; Townsend et al. 2002; Yabiku et al. 2012).

Applying survival analysis techniques to longitudinal demographic surveillance data from Rufiji, Tanzania, this chapter presents the first comprehensive description of children's exposure to parental absence through death, migration, child relocation, union dissolution and union formation. Rather than examining one cause in isolation, this chapter considers all causes simultaneously, estimating the relative magnitude of each type of absence and providing a better understanding of the distinctiveness and similarity of the processes shaping these causes. Together these estimates provide a detailed picture of Tanzanian children's risk of parental absence.

2.2 Causes of Parental Absence

This section outlines the existing literature on parental absence in sub-Saharan Africa,[4] organized around the causes examined in this chapter: death, marriage, migration and child fostering.[5] For each cause I describe its current status and the associated characteristics. While children live in a diverse range of family structures not limited to residence with parents, this chapter focuses exclusively on the co-residence of biological parents. Even in settings characterized by diffuse parenting responsibilities, biological parents play a critical role in the socialization, development and wellbeing of children (Clark and Hamplová 2013; Goody 1982; Grant and Yeatman 2014).

Parental Death

[4] When referring to the literature on absence in sub-Saharan Africa, I draw from studies across the region. This is not to diminish the tremendous diversity across the region, and when possible I refer to research and estimates from Tanzania, the country of study.

[5] Note that in the analysis, I use the term child relocation because I analyze maternal and paternal absence separately. Child fostering situations are included under child relocation; however, not all child relocations result in child fostering.

Motivated largely by high adult mortality resulting from the AIDS epidemic, there is a robust contemporary literature examining increases in orphanhood, even in countries with relatively low HIV prevalence (Beegle et al. 2010; Grassly and Timaeus 2005; Hill et al. 2008; Monasch and Boerma 2004). Much of the literature has focused on the ability of the extended family to absorb increasing numbers of orphans and resulting changes in living arrangements (Foster 2000; Hill et al. 2008; Madhavan 2004; Urassa et al. 1997). In Tanzania specifically, with an HIV prevalence of 8.1% in 1999, the prevalence of maternal and paternal orphans increased over the 1990s, from 2.0% and 4.9% in 1992 to 2.4% and 5.4% in 1999, respectively (Bicego et al. 2003). In 2004, Hosegood et al. found even higher percentages in Kisesa, Tanzania, with 4% of children under 15 maternal orphans, and 8% paternal orphans (2004).

While there is little research on the predictors of orphanhood, the literature on adult mortality may help us understand which children are at risk. Socioeconomic status has a well-established relationship with mortality, with more educated, higher status, and wealthier individuals experiencing lower mortality (Caldwell 1993; Deaton 2002; Marmot et al. 1991; Ross and Wu 1995). This relationship, however, has been complicated in sub-Saharan Africa, where Fortson finds a positive relationship between HIV and education (Fortson 2008). There is a need for a better understanding of which children are at risk of orphanhood, as well as a contextualization of orphans' experience in the broader range of living arrangements and experiences of parental absence (Beegle et al. 2010; Chuong and Operario 2012; Hampshire et al. 2014; Kasedde et al. 2014; Richter and Desmond 2008).

Marriage-related Absence

I use the term marriage-related absence to refer to absence initiated by divorce, remarriage, and non-marital childbearing. There is a rich anthropological documentation of traditional marriage

customs and childbearing practices highlighting marriage as a process in many sub-Saharan African societies (Comaroff and Roberts 1977; Meekers 1992). Historically, marital dissolution has been common in the region, with rates surpassing its Western counterparts (Lockwood 1998; Therborn 2004). By 1970, 5.5% of Tanzanian women aged 15 or older were divorced or separated, and 18% of marriages ended in divorce within four years (Therborn 2004). In 2004, 22-24% of reproductive aged adults in Tanzania had experienced a marital dissolution (de Walque and Kline 2012). The residence of children following divorce often depends on many factors, including the payment of brideprice, the age of the child, the lineage system followed in the area, and the remarriage of the parent (Winans 1964). Indeed, Grant and Yeatman (2014) find that children are not out-fostered immediately following divorce, but in the event of the mother's remarriage. Beyond marital dissolution, age at first birth has remained relatively constant, while age at first marriage is increasing, resulting in greater non-marital childbearing and more children residing in mother-only households (Beegle et al. 2010; Gage-Brandon and Meekers 1993; Harwood-Lejeune 2001; Lesthaeghe and Jolly 1995).

There is an extensive literature on the predictors of divorce in Western countries, generally finding that education is negatively associated with divorce, but women's employment is positively associated with divorce (Mott and Moore 1979; South and Spitze 1986; Teachman 2002). This literature has only recently been extended to settings in sub-Saharan Africa, where findings have been largely consistent with the established literature (Oya and Sender 2009; Takyi and Broughton 2006; Takyi 2001)**.** Some scholars argue that the resources secured from strong ties to the extended family network undermine the strength of the nuptial unit, promoting divorce (Reniers 2003; Takyi and Gyimah 2007). With the AIDS epidemic, there is evidence that divorce is used as a risk reduction strategy, and divorce is more common among HIV-positive

individuals (Grant and Soler-Hampejsek 2014; Porter et al. 2004; Reniers 2008). Finally, regarding premarital birth, there is some evidence that educated, urban women are more likely to have children outside of marriage (Harwood-Lejeune 2001).

Migration

Migration can be categorized into two distinct types – circular and permanent (Collier et al. 1986; Collinson et al. 2006; Oucho 1998). Circular migration is the norm in contemporary sub-Saharan Africa, associated with temporary periods away earning wages and sending remittances, and subsequent return to the home community (Dodson 2000; Oucho 1998). While countries in southern Africa experience high rates of international labor migration to South Africa, much of the migration in Tanzania is internal rural-rural migration or rural-urban migration associated with urbanization (Collier et al. 1986; Collinson et al. 2006; Oucho 2002; Tienda 2006). Nevertheless, a majority of the literature focuses on international migration, particularly to South Africa and Europe (Baizán et al. 2014; González-Ferrer et al. 2012; Griffiths 1997; Mezger Kveder and Flahaux 2013). While a few studies address the role children play in shaping migration decisions, children are largely ignored in the migration literature in sub-Saharan Africa (Adserà and Tienda 2012; Madhavan et al. 2012). This is particularly important because female migration is becoming more common and many children live in households with migrants; Townsend et al. estimate that in South Africa, 60% of children live in households that include at least one migrant (Townsend et al. 2002).

There are several studies that examine the predictors of migration, with mixed findings depending on the sending and receiving contexts (Posel et al. 2006; Tacoli 2001). Some find that poorer households are more likely to send migrants (Collinson et al. 2006; Oucho 2002), but perhaps contradictorily, others find that more educated individuals are more likely to migrate

(Posel et al. 2006; Tacoli 2001). For female migrants, Posel et al. (2006) find that older, more educated, unmarried women are more likely to migrate. Indeed, women with young children are less likely to migrate (Townsend et al. 2002). Finally, larger households (Collinson et al. 2006) and households with elderly women (Posel et al. 2006) are more likely to send female migrants.

Fostering

Child fostering refers to a situation where a child does not live with either biological parent.[6] It may be temporary or permanent, motivated by crisis or opportunity (Akresh 2009; Castle 1995; Grant and Yeatman 2014). Fostered children may be orphaned or have living parents. Indeed, fostering may be a consequence of the three causes outlined above, as children may be sent to live with non-parental adults in the event of parental death; non-marital childbearing, divorce or remarriage; or migration (Lockwood 1998). As such, children's experiences of fostering are widely varied (Verhoef and Morelli 2007). Having reviewed death, marriage and migration, I now turn to kinship fostering as a strategy of redistribution and reciprocity across households (Goody 1982; Isiugo-Abanihe 1985).

Fosterage in sub-Saharan Africa is widespread and prevalent; in 2002, approximately 9% of children in the region were foster children (Monasch and Boerma 2004). Within kinship fostering there are specific push and pull factors influencing the supply of and demand for foster children, including apprenticeship, domestic assistance, and educational opportunities (Fiawoo 1978; Goody 1982, 2005; Isiugo-Abanihe 1985). While there is concern that traditional practices of fostering are threatened by the added burden of children orphaned by the AIDS crisis, in general the evidence suggests that the extended family has largely been able to accommodate

[6] Again, note that the analysis refers to child relocation, rather than child fostering, because it considers maternal and paternal absence separately. When possible, I note when child relocation implies that the child does not reside with either parent.

orphans and the preexisting demand for foster children (Grant and Yeatman 2012; Hosegood et al. 2007; Madhavan 2004).

Despite the prevalence of fostering, the predictors of fostering in the literature are inconsistent, perhaps due to the wide variety of types of fostering. One consistent finding is that unmarried and less educated women are more likely to out-foster their children than their married and more educated counterparts (Isiugo-Abanihe 1985; Lloyd and Desai 1992; McDaniel and Zulu 1996; Page 1989; Vandermeersch 2002). Mothers in households with other resident kin are less likely to foster their children, as there are alternative caregivers available in the household (Bledsoe and Isiugo-Abanihe 1989; Fiawoo 1978; Goody 1982). Isiugo-Abanihe (1985) finds fostering to be more common among girls than boys. Finally, there is evidence that fostering practices vary by wealth, whereby children who are out-fostered are from poorer households, but children who are actively requested by households and in-fostered reside in wealthier households (Castle 1995; Vandermeersch 2002).

While parental death, marriage-related absence, migration and child fostering are important causes of absence, a focus on a singular cause to the exclusion of alternatives obscures children's experiences of parental absence. Different kinds of absence may follow distinct patterns, and present different advantages or disadvantages. Rather than examining one cause in isolation, this chapter considers all causes simultaneously, bringing into dialogue a disparate literature on the various sources of absence and providing a better understanding of the distinctiveness and similarity of these causes.

2.3 Data and Methods

Research Setting

Designed to calculate vital statistics in developing countries lacking national registration data, health and demographic surveillance systems (HDSS) record all vital events within a given catchment area. This chapter uses longitudinal data from one such site, the Rufiji Health and Demographic Surveillance System in Tanzania. Established in 1998 by the Ifakara Health Institute, the Rufiji HDSS is located in the northeast of Rufiji District, approximately 180 kilometers from Dar es Salaam, Tanzania's largest city. The district is mainly rural, with subsistence farming the primary occupation, although the population is concentrated around four trading centers. The area's population is largely Muslim and characterized by high fertility and high mortality. While both demographic processes are declining, the population is young, with 46% under age 15, and life expectancy remains modest, 65 years in 2012.

The Rufiji HDSS follows a dynamic cohort of approximately 110,000 residents (roughly half of the District population) in 33 villages in a catchment area of 1,813 square kilometers. Individuals enter the cohort through initial census enumeration, birth or in-migration, and exit through death or out-migration. Every four months field teams visit each registered household to check the status of every member using a combination of individual and household identification numbers, names, geographic coordinates, and community informants. At these visits surveyors record the dates of all births, deaths, in and out migrations, and marital status changes that have occurred since the previous visit. More detailed information on the Rufiji HDSS and HDSS more generally may be found elsewhere (Mrema et al. 2015; Mwageni et al. 1998; Sankoh and Byass 2012; Ye et al. 2012).

While HDSS provide detailed longitudinal data unavailable from other sources in developing countries, the platform is not without its weaknesses. First, the data are not publicly available and replication is not possible. However, efforts are underway to anonymize and share

the data (Sankoh and Byass 2012). Second, the data are not nationally representative. However, as Madhavan et al. (2012:75) contend, nationally representative data cannot show population dynamics in the way that "localized, prospectively collected data can". There are no nationally representative data available in developing country contexts that would permit the kind of detailed longitudinal analysis of children's experiences presented here. While the data are not nationally representative, the broader social changes underway in Rufiji – urbanization, modernization, individualization – are characteristic of the development processes in the region more generally. The results of this chapter are therefore relevant not only for this particular geographic locale, but for policymakers in Tanzania and other developing countries who are trying to improve children's welfare in the face of social and economic changes that challenge traditional family forms.

Exposure Episodes and Events

Using dates of birth, death, entry and exit, as well as household identification numbers, I construct residency episodes for all individuals. I then link child and parent residency episodes using identification numbers, generating child exposure episodes and events of parental absence. Child exposure begins at birth and ends with an event of parental absence or right-censoring. An event of parental absence is defined as the parent and child not living in the same household. This occurs when the parent dies, when the parent moves out of the household without the child, or when the child migrates out of the household without the parent. While children may experience multiple events, the vast majority (over 96%) experience zero or one event. Therefore, the analyses here examine only the first event of absence.[7] A child is right-censored in

[7] The rarity of repeated events may be due to the definition of migration used in the site. An individual is considered a migrant when he/she is non-resident in the registered household for two consecutive visits; at the visit following the first report of absence, if the individual is still absent an out-migration form is completed, indicating the date of

four circumstances: 1) the child turns 10; 2) the child and parent move out of the site together; 3) the child dies; or 4) the end of observation (January 1, 2012).

Parental absence is decomposed into five causes: death, parental migration, child relocation, union dissolution and union formation. Death refers to the death of the parent. Parental migration is defined as a move of the parent out of the co-residential household not within six months of a marital status change.[8] Child relocation is defined as a move of the child out of the co-residential household, not within six months of a marital status change of the parent; the child may be leaving the household in the company of the other parent, or on his/her own.[9] Union dissolution and formation are defined as a move out of the co-residential household (by the parent or the child) within six months of a divorce or marriage/remarriage, respectively. This includes formal and informal partnerships, although cohabitation accounts for less than 1% of partnerships. Union status changes are determined using three sources of information: dates of marriage events in the marriage records database, changes in stated marital status collected annually on the household roster, and divorce or marriage as stated reason for migration.

Covariates

In addition to the episode and event data described above, this chapter examines differences in the risk of parental absence by a number of important covariates (see Table 2.1 for descriptive

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out-migration. Consequently, individuals must be absent for a minimum of four months in order to be classified as migrants. Absences or returns of durations less than four months are not captured.

[8] Migration may be internal (from one household in the site to another household in the site) or external (from a household in the site to somewhere outside of the site).

[9] Under the cause of absence labeled as child relocation, there are three possibilities. First, traditional child fostering, where the child leaves the household and both parents remain. Second, the child leaves the household of the parent under consideration, but the other parent is already absent. In this case, it is impossible to know whether the child is leaving one parent to reunite with the other, or going to a different location where he/she will not reside with either parent. Third, the child leaves the household of the parent under consideration at the same time as the other parent. In this case, it is impossible to know if the exiting child and parent are going to the same destination and will remain co-resident, or if they are going to different destinations. Due to the uncertainty regarding what happens in situations 2 and 3, I include all situations under the same cause labeled child relocation.

statistics). I include the basic demographic controls of child sex, birth order, and mother's and father's age at child's birth.

I measure socioeconomic status using parental education and occupation, household wealth, and caregiving resources, including the other parent and adult kin. Parental education is measured as highest grade completed at the time of the child's birth. Occupation is defined as the activity to which individuals devote the majority of their time, and is divided into three categories: subsistence agriculture, wage employment (including paid agricultural labor), and unemployed. Occupation data are collected annually, and the measure is included as a time-varying covariate. Models also include a time-varying measure of household wealth quintile constructed from an asset ownership index using principal components analysis (Rutstein and Johnson 2004). Asset ownership data were not collected annually.[10] As a result, values of wealth must be carried forward until a new measure is available. To insure that the models are identifying predictors of absence, the measure of wealth must precede the event of absence, so data are not carried backwards. Missing wealth data are not imputed further, and the remaining missing cases are excluded from analysis. Finally, to measure caregiving resources, I include a time-varying indicator of co-residence of the other parent, and a time-varying count measure of co-resident, non-parental adults aged 18 and older.[11]

[10] Asset data were collected in 2001, 2005, 2008, 2009, 2010 and 2011.

[11] While children usually leave home for education or marriage by the age of 18, this measure may include adult siblings who reside with the child. More often it includes aunts, uncles and grandparents. While lineality is certainly important, given the available data I am unable to differentiate between maternal and paternal kin. For children born into two-parent households, approximately 9% of co-resident adults at the time of birth are older than 40 (an approximation for grandparents). For children born into single-mother households, approximately 25% of co-resident adults at the time of birth are older than 40.

Table 2.1 Sample Descriptive Statistics

	Kaplan-Meier			Piecewise Exponential		
	Two-parent		Single-mother	Two-parent		Single-mother
	Maternal	Paternal	Maternal	Maternal	Paternal	Maternal
Child Characteristics						
Male	50%	50%	51%	51%	49%	51%
Birth order	4.14 (2.45)	4.13 (2.45)	2.19 (1.81)	4.13 (0.02)	4.13 (0.02)	2.20 (0.02)
Parental Characteristics at Birth						
Mother's age	27.91 (7.21)	28.02 (7.39)	22.16 (6.91)	27.89 (0.04)	28.01 (0.04)	22.17 (0.07)
Father's age	37.44 (10.98)	37.43 (10.99)	-	37.40 (0.07)	37.39 (0.07)	-
Mother's years of schooling	3.55 (3.58)	3.56 (3.58)	4.70 (3.58)	3.55 (0.02)	3.53 (0.02)	4.70 (0.04)
Father's years of schooling	4.91 (4.10)	4.92 (4.11)	-	4.90 (0.02)	4.92 (0.02)	-
Agriculturalist	58%	46%	18%	58%	46%	18%
Employed	7%	25%	26%	7%	25%	25%
Household Characteristics at Birth						
Quintile of asset ownership						
Lowest (reference)	18%	18%	18%	18%	18%	19%
Low	21%	21%	19%	21%	21%	18%
Middle	23%	23%	21%	23%	22%	21%
High	21%	21%	22%	21%	21%	22%
Highest	17%	17%	20%	17%	18%	20%
Number co-resident adults	1.46 (2.05)	1.45 (2.05)	3.23 (2.44)	1.45 (.01)	1.45 (0.01)	3.23 (0.03)
Children	22,669	23,023	7,577	11,556	10,478	5,805
Events	2,114	4,376	1,454	1,225	2,279	1,099

Percentages, or means with standard errors in parentheses. Statistics calculated using weights for piecewise exponential samples.

Analytic Sample

For the analyses, the sample of children under study must meet two eligibility criteria: 1) be born in the HDSS catchment area between 2001 and 2011, and 2) have an identifiable and co-resident mother or father at birth. The analytic sample includes only children born in the HDSS because if a child migrates into the site or is born before surveillance began, they may have already experienced one or more events of absence that would not be reflected in the data.

Analyses are conducted separately for maternal and paternal absence. Moreover, the analyses consider two groups of children separately: those born into two-parent households with an identifiable and co-resident mother and father at birth, and those born into mother-only households with an unidentifiable father at birth. Approximately one quarter of children born into the Rufiji HDSS have an unknown father identification number, indicating that the father does not reside in the household at the time of birth.[12] While it is not possible to identify the reason for absence, it is possible to use mother's marital status to differentiate between non-marital births (births to a single mother and unidentifiable father) and non-resident births (births to a married mother with a non-resident father). The majority (>85%) are non-marital births to single mothers. I concentrate on single mothers in the analyses of maternal absence because there are not a sufficient number of non-resident births to support cause-specific analysis. Furthermore, in analyses examining predictors of father absence at birth (Table 2.4), the results differ for non-marital and non-resident births, making it inappropriate to combine the two.

Table 2.1 presents descriptive statistics for the analytic samples. Single mothers are younger, more educated, and have fewer children on average than mothers in the two-parent sample. Furthermore, they are less likely to be employed or involved in subsistence agriculture,

[12] Such difficulties with data regarding fathers in sub-Saharan Africa have been discussed elsewhere and should not preclude our analysis (Hosegood and Madhavan 2010). Madhavan et al. 2012 find similar percentages for a South African dataset.

and more likely to be unemployed (including in school). Single mothers live in households with an additional 1.5 adults, suggesting that they reside with their own parents.

Methodology

This chapter employs two survival analysis methodologies – Kaplan-Meier estimation and piece-wise exponential regression. To investigate children's risk of parental absence, the Kaplan-Meier method of estimating the survivor function is implemented on all children for first events. I use this method to estimate the percent of children experiencing a first event of parental absence by age 10 and the average number of years spent continuously residing with the parent.[13] Using a competing risks framework I estimate the cumulative incidence of absence by cause. For children born into two-parent households, the analytic samples for the Kaplan-Meier estimates are 2,114 first events to 22,669 exposed child-mother pairs and 4,376 first events to 23,023 exposed child-father pairs. The analyses also consider 1,454 first events to 7,577 exposed child-single mother pairs (Table 2.1).

The Kaplan-Meier method does not yield estimates of the hazard function. Therefore, the second set of analyses rely on semi-parametric estimation of piecewise exponential models, dividing exposure episodes into age intervals and assuming the baseline hazard is constant in each interval.[14] The choice of intervals depends on several factors; importantly, an adequate number of events must occur within each interval. Here I use yearly intervals when possible, but combine intervals when necessary to insures that at least ten events occurred in each. The age intervals for each model are indicated in the final row of Tables 2.2, 2.3 and 2.5.

[13] Continuous residence refers to co-residence with no absences lasting four months or longer. Absences of less than four months are not captured in the data, and are considered continuous co-residence.

[14] The piecewise exponential model was chosen over the Cox model because of the desire to estimate the hazard function itself. In robustness checks I estimate Cox regressions and the findings are essentially unchanged (results not shown).

The model is expressed as

$$\lambda_{ij} = \lambda_j \exp\{X_{ij}\beta\},$$

where λ_{ij} is the hazard of individual i in interval j, λ_j is the baseline hazard in interval j assumed to be constant, and X_{ij} is a vector of time-constant and time-varying covariates.

While Kaplan-Meier estimation is conducted for all children, this presents a problem for estimating standard errors, as the experience of parental absence is not independent across children.[15] Inclusion of a random effect for the parent would not sufficiently correct for this dependence, as the events may be perfectly correlated across children (as with parental death). For the piecewise exponential regression analyses I address this dependence by randomly selecting one child per parent and applying probability weights by sibship size (inverse of the probability that the child was selected from his/her sibship).[16] Note that as analyses are conducted separately for maternal and paternal absence, sibships are defined by shared maternity and paternity, respectively. For children born into two-parent households, this results in an analytic sample of 1,319 first events to 12,207 exposed child-mother pairs and 2,555 first events to 11,123 exposed child-father pairs. For children born into single-mother households, this results in a sample of 1,144 first events to 6,230 exposed child-single mother pairs (Table 2.1). Finally, to investigate the predictors of father absence at birth, I estimate logistic regression on the two-parent and mother-only samples combined.

[15] This dependence is not unique to the piecewise exponential model. I have chosen to include the entire sample of children in the Kaplan-Meier estimates because I am interested primarily in precise estimation of the survivor function, not in the standard errors.

[16] In robustness checks (not shown) I estimate the models with different strategies for addressing this dependence, including shared frailty terms to account for multiple children of the same parent, randomly sampling children but not including weights, and including all children without attempting to address the dependence among siblings. The conclusions are unchanged.

2.4 Results

The Risk of Parental Absence

Using Kaplan-Meier estimation of the survival function for the sample of children born into two-parent households, Figures 2.1 and 2.2 present the proportion of children who never experience absence in the lightest area of the graph, labeled as "Present". The dividing line between this area and the areas above is the Kaplan-Meier survival curve for overall absence. 25% and 40% of children experience maternal and paternal absence by age 10, respectively. The risk of maternal absence for children born into single-mother households is markedly higher than the risk for children born into two-parent households; almost 70% experience overall maternal absence by age 10 (Figure 2.3).

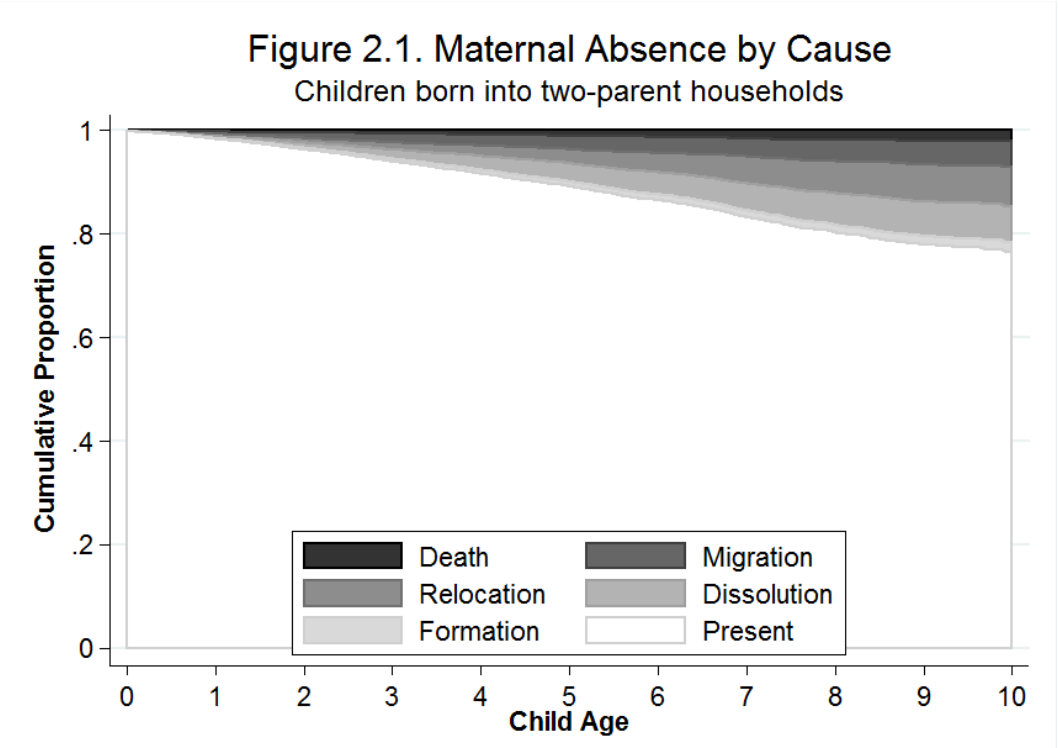


Figure 2.2. Paternal Absence by Cause

Children born into two-parent households

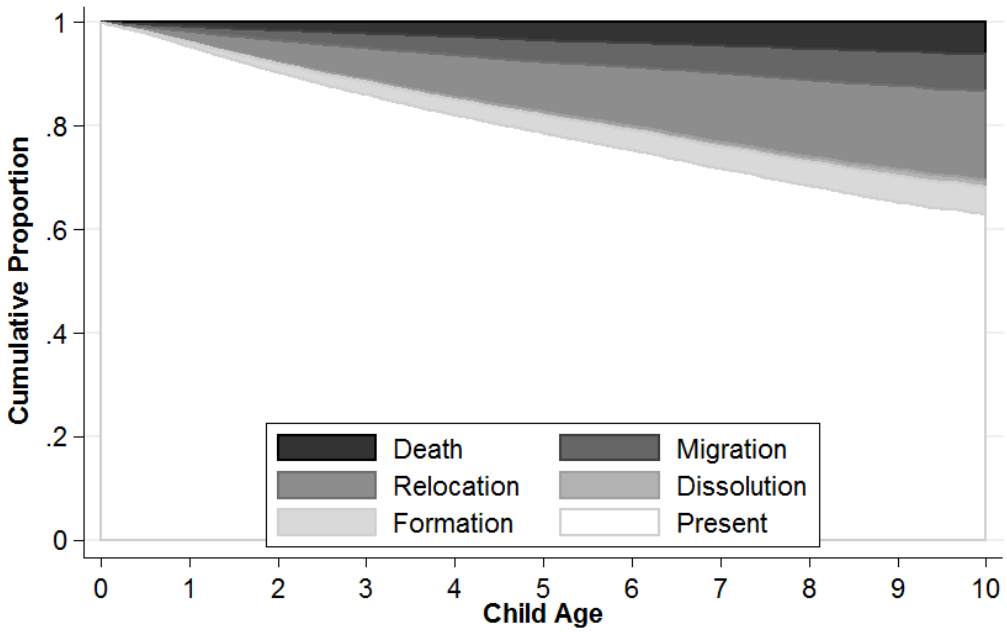
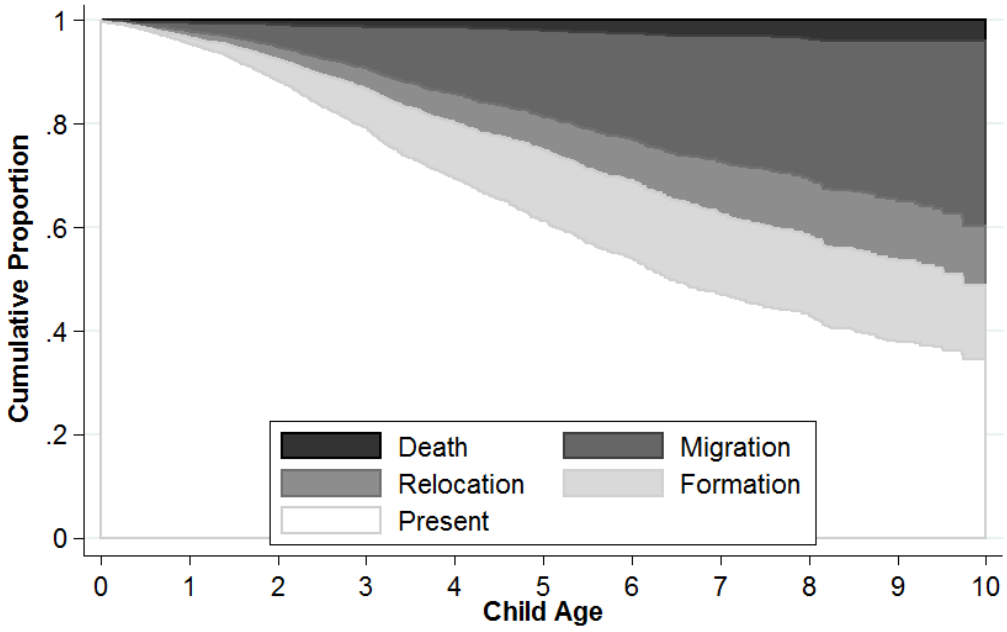


Figure 2.3. Maternal Absence by Cause

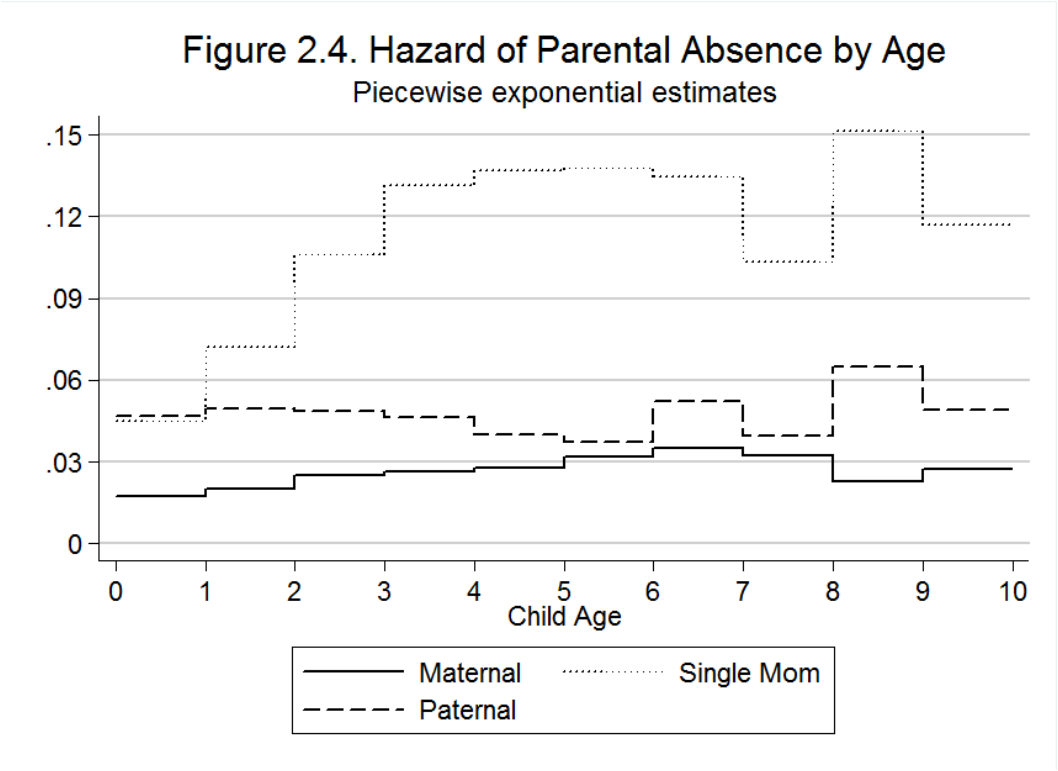
Children born into single-mother households



To get a better sense of how these overall figures translate into the childhood experience of parental absence, I estimate the average duration of time a child spends living continuously with the parent from birth to age 10. Children born into two-parent households who experience an event of absence spend an average of 8.8 years living with the mother, and 7.8 years living with the father. However, this average obscures the permanence of absence experienced by many children; approximately 60% of children who experience maternal or paternal absence never experience a return of the parent while under observation.[17] Most absence occurs early in childhood, with half of children who experience maternal absence doing so by age 5, and by age 4 for paternal absence.[18] For children born into single-mother households, maternal absence occurs earlier and is of a greater duration; the 70% of children who experience maternal absence spend an average of 6.6 years residing with the mother, and half experience maternal absence by age 4.5.[19]

The age pattern of absence can be examined more closely by fitting a piecewise exponential model including covariates for age intervals only (Figure 2.4). For children born into two-parent households, the shape of the hazard is different for maternal and paternal absence; the hazard of maternal absence increases with age, while the hazard of paternal absence declines almost monotonically from birth. For children born into single-mother households, the hazard of maternal absence is higher at every age than that for children born into two-parent households. This hazard increases rapidly in the first four years of childhood, remaining high from age 5 to 10.

[17] Temporary returns of less than four months are not captured in the data.
[18] While results are not shown, this can be inferred in Figures 2.1 and 2.2 as the median age of absence for children who ever experience absence.
[19] While results are not show, this can be inferred in Figure 2.3 as the median age of absence for children who ever experience absence.



Parental Absence by Cause

While examining overall parental absence is informative, the predictors and consequences of absence may differ depending on the cause. This section examines parental absence due to parental death, parental migration, child relocation, union dissolution and union formation. Figures 2.1-2.3 present the cumulative proportion of children experiencing each type of absence by age estimated from a competing risks Kaplan-Meier model. Considering union dissolution and formation together as marriage-related causes, it is apparent from Figures 2.1-2.3 that parental absence due to death (in black) constitutes the smallest proportion of children's overall exposure to parental absence. While the cause structure varies across groups, death is consistently the least common cause of absence, with 2.4%, 6.2% and 4% of children experiencing maternal, paternal and single-mother absence by age 10, respectively.

Maternal absence among children born into two-parent households is most commonly caused by marital status changes of the mother. Note, however, that children are much more

likely to experience maternal absence due to union dissolution (7.7%) than to union formation (1.8%). The second leading cause of maternal absence is child relocation. Recall that this cause ignores the residential status of the other parent, and it is possible that when the child leaves the household of the mother, he/she is leaving with the father, and vice versa. Three-quarters of children who experience maternal absence through child relocation are leaving the mother and father simultaneously, and an additional 10% were already living apart from the father. Maternal migration is the third ranking cause of maternal absence.

The decomposition of paternal absence by cause differs from maternal absence. Among children born into two-parent households, child relocation is by far the leading cause of paternal absence. Again, this cause ignores the residential status of the other parent, and only 20% of children are leaving both the father and the mother, while over half of children are leaving their fathers in the company of their mothers.[20] Paternal migration and marriage-related causes make up nearly the same share of children's experience of paternal absence. However, in contrast to maternal marriage-related absence, paternal absence due to union formation[21] is more likely than union dissolution (5.8% vs 1.4%).

Finally, for children born into single-mother households the cause structure of absence again looks quite different as compared to maternal and paternal absence for children born into two-parent households.[22] Maternal migration is the leading cause of absence, accounting for over half of the overall experience of absence. Union formation and child relocation account for nearly the same share of children's experience of maternal absence.

[20] It is possible that this move of the child and mother out of the household of the father represents an informal separation or the start of a union dissolution, even though no marital status change is reported. However, the fathers remain under observation, and few of them report a union dissolution within five years following the exit of the child and mother.
[21] This does not include polygamous unions, or marriages to additional wives while still married to the mother.
[22] Note, as all single mothers are unmarried at birth, I do not consider union dissolution as a cause of absence.

Table 2.2 Hazard ratios for the risk of first maternal absence by cause – children born into two-parent families

	All Cause	Death	Migration	Relocation	Dissolution	Formation
Male child	0.99	1.30	1.14	0.66**	1.15	1.51
	(0.07)	(0.31)	(0.17)	(0.10)	(0.13)	(0.38)
Child's birth order	0.91**	0.94	0.89	0.92	0.90*	1.01
	(0.03)	(0.11)	(0.06)	(0.05)	(0.05)	(0.18)
Mother's age	0.99	1.05	0.98	1.00	0.97	0.92
	(0.01)	(0.04)	(0.02)	(0.02)	(0.02)	(0.06)
Father's age	0.99	0.99	1.00	1.00	0.99	0.98
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Mother's education	1.00	1.02	0.97	1.03	0.98	1.07
	(0.01)	(0.03)	(0.02)	(0.02)	(0.02)	(0.04)
Father's education	0.99	0.97	0.98	1.00	1.00	0.99
	(0.01)	(0.03)	(0.02)	(0.02)	(0.01)	(0.03)
Mother's Occupation (unemployed)						
Agriculture	1.04	1.15	0.95	1.13	1.33	0.45**
	(0.10)	(0.38)	(0.18)	(0.23)	(0.22)	(0.14)
Employed	1.06	1.37	1.11	1.08	0.60	1.52
	(0.17)	(0.73)	(0.33)	(0.37)	(0.17)	(0.61)
Wealth Quintile (lowest)						
Low	1.14	1.04	0.96	1.69*	1.12	0.74
	(0.14)	(0.41)	(0.25)	(0.43)	(0.23)	(0.27)
Middle	1.25	0.72	1.30	1.95**	1.15	0.78
	(0.15)	(0.29)	(0.33)	(0.49)	(0.23)	(0.28)
High	1.11	0.69	1.03	1.48	1.24	0.60
	(0.14)	(0.27)	(0.27)	(0.39)	(0.25)	(0.20)
Highest	1.06	1.02	1.08	1.21	1.33	0.40*
	(0.14)	(0.41)	(0.30)	(0.35)	(0.28)	(0.18)
Father co-resident	0.30***	0.47	0.17***	0.27***	0.44**	0.17
	(0.08)	(0.26)	(0.04)	(0.10)	(0.13)	(0.23)
Co-resident adults	1.05**	1.11*	1.16***	0.84**	1.08***	1.09
	(0.02)	(0.05)	(0.03)	(0.05)	(0.02)	(0.06)
Children	11,556	11,556	11,556	11,556	11,556	11,556
Events	1,225	114	278	309	420	104
Deviance	19,657.36	2,451.96	5,255.13	7,078.39	7,783.09	2,169.01
Child age intervals	y[0-10]	y[0-5],(5-10]	y[0-6],(6-10]	y[0-7],(7-10]	y[0-7],(7-10]	y[0-5],(5-10]

Results for piecewise exponential models. Robust standard errors, including weights for sibship size, in parentheses. y indicates yearly age intervals for the range specified. * p<.05, ** p<.01, *** p<.001

Table 2.3 Hazard ratios for the risk of first paternal absence by cause – children born into two-parent families

	All Cause	Death	Migration	Relocation	Dissolution	Formation
Male child	0.90	1.09	0.98	0.81*	1.09	0.92
	(0.05)	(0.18)	(0.12)	(0.07)	(0.14)	(0.12)
Child's birth order	0.91***	1.01	0.99	0.87***	0.88**	0.85**
	(0.02)	(0.05)	(0.05)	(0.03)	(0.04)	(0.05)
Father's age	1.01***	1.05***	1.00	1.02***	1.00	0.99
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Mother's age	0.98**	1.01	0.97	0.98	0.96*	0.95*
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
Father's education	1.00	1.01	1.01	1.00	0.96*	0.96
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
Mother's education	1.01	0.94*	1.04	1.02	1.02	1.01
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
Father's occupation (unemployed)						
Agriculture	0.82*	1.04	0.74	0.82	1.17	0.93
	(0.07)	(0.29)	(0.13)	(0.11)	(0.24)	(0.19)
Employed	0.98	1.59	0.85	0.98	1.26	1.02
	(0.09)	(0.46)	(0.16)	(0.14)	(0.28)	(0.22)
Wealth Quintile (lowest)						
Low	0.89	0.65	1.01	0.97	0.87	0.83
	(0.08)	(0.16)	(0.21)	(0.14)	(0.17)	(0.18)
Middle	0.91	0.73	0.96	0.99	1.04	0.93
	(0.08)	(0.18)	(0.19)	(0.13)	(0.21)	(0.19)
High	0.81*	0.55*	0.82	0.88	1.02	1.03
	(0.08)	(0.15)	(0.18)	(0.12)	(0.21)	(0.22)
Highest	0.81*	1.04	0.77	0.78	0.95	0.90
	(0.09)	(0.27)	(0.17)	(0.13)	(0.24)	(0.23)
Mother co-resident	1.13***	0.83***	0.87	1.19***	1.06	1.07
	(0.03)	(0.03)	(0.12)	(0.03)	(0.07)	(0.07)
Co-resident adults	1.03*	1.05	1.08**	0.98	1.06*	1.06*
	(0.01)	(0.04)	(0.03)	(0.02)	(0.03)	(0.03)
Children	10,478	10,478	10,478	10,478	10,478	10,478
Events	2,279	231	433	897	380	338
Deviance	34,136.56	4,879.17	9,704.39	17,706.96	7,714.89	6,641.78
Child age intervals	y[0-10]	y[0-8], (8-10]	y[0-7], (7-10]	y[0-6], (6-10]	y[0-8], (8-10]	y[0-10]

Results for piecewise exponential models. Robust standard errors, including weights for sibship size, in parentheses. y indicates yearly age intervals for the range specified. * p<.05, ** p<.01, *** p<.001

Predicting Parental Absence - Children Born into Two-parent Families

The preceding section details the risk, duration and type of absence children experience. However, this does not identify which children face the highest risk. This section considers the demographic and socioeconomic predictors of the risk of parental absence, highlighting variation in the predictors between maternal and paternal absence across causes.

There are several consistent predictors of both maternal and paternal absence. First, the piecewise exponential models in Tables 2.2 and 2.3 include an indicator variable for child's gender. With the exception of child relocation, male and female children are at equal risk of parental absence. For both maternal and paternal absence due to child relocation, male children are significantly less likely to experience absence, with a 40% and 15% lower risk, respectively. This is consistent with the child fostering literature, which finds that girls are more likely to be out-fostered to help other relatives with domestic activities (Castle 1995; Goody 1982; Isiugo-Abanihe 1985).

Co-residence of the other parent is protective in terms of maternal and paternal death and migration. The risks of maternal death and migration are approximately 70% lower if the father is co-resident. The risk of paternal death is 20% lower if the mother is co-resident, while the risk of paternal migration is 50% lower. In contrast to the protective effect of co-residence of the other parent, co-residence of non-parental adults is associated with an increased risk of parental migration. Each additional co-residential adult is associated with a 9% and 6% greater risk of maternal and paternal migration, respectively. Similarly, children with more co-residential adults are more likely to experience parental absence due to union dissolution, with a 6% and 8% increase in the hazard of maternal and paternal absence, respectively, with each additional co-

residential adult. Importantly, these associations between co-resident adults and parental absence are significant and are not mediated by household wealth.

Turning to maternal and paternal absence separately, maternal education is positively associated with children's risk of maternal absence due to child relocation. For each additional year of mother's education, the hazard of maternal absence due to child relocation is 4% higher (Table 2.2). This is in contrast to most child fostering studies, which find that less educated mothers are more likely to out-foster their children (Isiugo-Abanihe 1985; Lloyd and Desai 1992; McDaniel and Zulu 1996; Page 1989; Vandermeersch 2002). This discrepancy may be due to the low levels of education in this setting, or to changes in female migration patterns (Posel et al. 2006). Maternal education is not associated with other types of maternal absence.

The importance of differentiating between union dissolution and union formation is illustrated through the differential associations with occupation; children of employed mothers face a 42% lower risk of maternal absence due to dissolution, while children of agricultural mothers face a 53% lower risk of maternal absence due to formation. The results for wealth vary across causes of maternal absence. Both overall and by cause, there is no evidence of a wealth gradient in absence. There is suggestive evidence that the hazard of absence due to union formation is lower for children in wealthier households, although the difference between quintiles is only statistically significant for the highest as compared to the lowest. Finally, the risk of maternal absence due to child relocation is negatively associated with the number of co-resident adults. This is consistent with the literature on fostering as a coping mechanism in resource constrained environments, whereby women are less likely to foster their children if they have other kin in the household to help them care for the children (Bledsoe and Isiugo-Abanihe 1989; Fiawoo 1978; Goody 1982). In supplementary analyses, there is suggestive evidence of an

interaction between the number of co-resident adults and the child's age, with the negative association declining as the child ages, although the interaction is not statistically significant.

Similar to maternal education, paternal education is only associated with one cause of absence (Table 2.3). Paternal education is negatively associated with the risk of paternal absence due to dissolution, with each additional year of father's education associated with a 4% lower risk. Paternal occupation in subsistence agriculture, as compared to unemployed, is protective in terms of the risk of paternal absence due to migration and child relocation. Unlike with maternal absence, there is some evidence of a wealth gradient in paternal absence overall; the risk of paternal absence due to all causes declines significantly across wealth quintiles. However, examining each cause independently demonstrates important variation; there is no significant association between wealth and any cause-specific risk of paternal absence, although the direction of the association is consistent for paternal migration. Finally, children with more co-resident adults face a higher risk of paternal absence due to union formation.

Predicting Parental Absence - Children Born into Single-Mother Families

Before examining the predictors of maternal absence for children born into single-mother families, I consider paternal absence at birth. As discussed in the data section, approximately 25% of children born into the Rufiji HDSS do not have identifiable fathers. Approximately 85% of children with unidentifiable fathers are born to unmarried mothers, suggesting that the majority of children with non-resident fathers at birth experience absence due to non-marital childbearing. The remainder may have married parents who live apart, a common consequence of labor market structures in the area. Regardless of the reason, it can be reasonably assumed that these fathers are not resident in the same household as the child from birth until the end of observation. Including children with unidentifiable fathers and assuming they experience

absence at birth increases the estimates of percent of children experiencing paternal absence from 40% to 58% by age 10 (Figure 2.5).

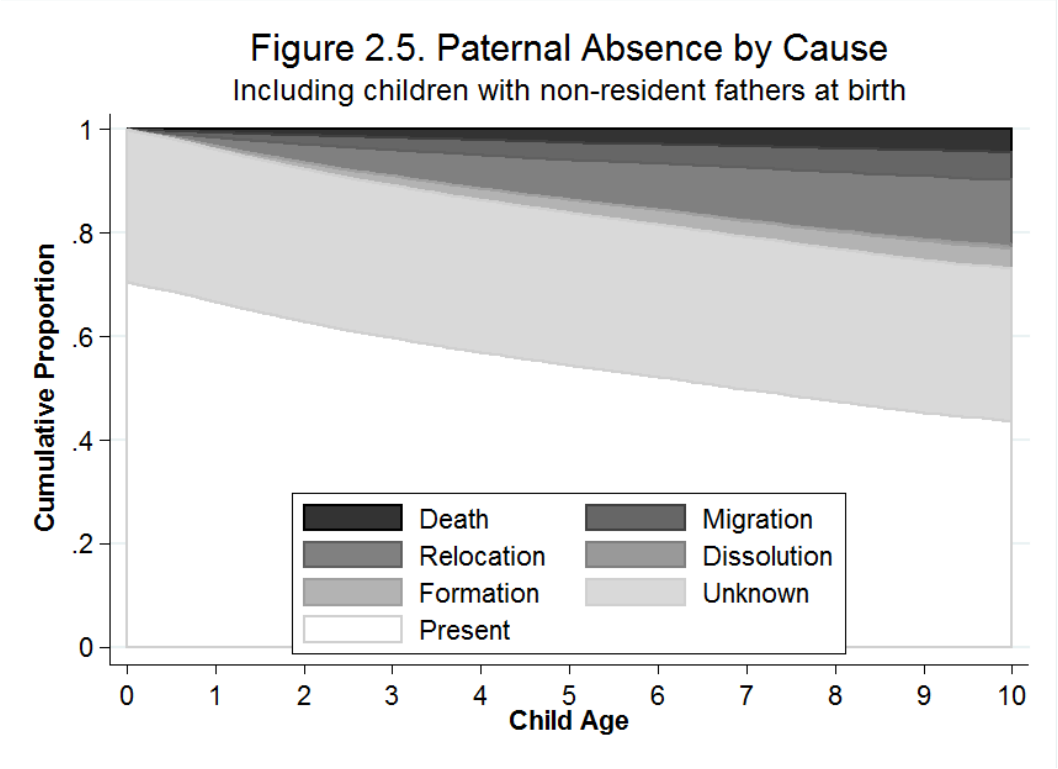


Table 2.4 presents logistic regression results for the odds of having an unidentifiable father at birth. In the second and third columns, I differentiate between being born to an unmarried mother and unidentifiable father (non-marital birth), and being born to a married mother and unidentifiable father (non-resident birth). Children with younger, more educated mothers are more likely to have an unidentifiable father at birth, and this relationship holds for non-marital births as well. On the contrary, children with older mothers are more likely to be non-resident births. Finally, there is a significant wealth gradient in the odds of having an unidentifiable father at birth, as well as being a non-marital birth; there is no wealth gradient in the odds of being a non-resident birth. These results highlight the importance of restricting the analysis to non-marital births. As such, the analyses of the predictors of maternal absence for

children born with unidentifiable fathers are restricted to non-marital births, or children born into single-mother families (Table 2.5).

Table 2.4 Odds ratios for unidentifiable father at birth

	All births	Non-marital births	Non-resident births
Male child	1.05	1.09	0.91
	(0.05)	(0.05)	(0.08)
Child's birth order	0.82***	0.79***	0.89***
	(0.02)	(0.02)	(0.03)
Mother's age	0.98***	0.95***	1.07***
	(0.01)	(0.01)	(0.01)
Mother's education	1.06***	1.08***	0.99
	(0.01)	(0.01)	(0.01)
Mother's Occupation (unemployed)			
Agriculture	0.44***	0.30***	2.08***
	(0.02)	(0.02)	(0.24)
Employed	1.73***	1.58***	1.74***
	(0.12)	(0.11)	(0.25)
Wealth Quintile (lowest)			
Low	0.65***	0.66***	0.77
	(0.05)	(0.06)	(0.12)
Middle	0.69***	0.66***	0.91
	(0.05)	(0.05)	(0.13)
High	0.70***	0.71***	0.84
	(0.05)	(0.06)	(0.12)
Highest	0.53***	0.51***	0.89
	(0.04)	(0.04)	(0.13)
Co-resident adults	1.32***	1.32***	1.13***
	(0.01)	(0.01)	(0.02)
Children	14,019	14,437	14,437
Absent fathers	6,143	5,333	810
Pseudo R-squared	0.20	0.27	0.04

Results for logistic regression models. Robust standard errors, including weights for sibship size, are in parentheses. *** p<0.001, ** p<0.01, * p<0.05

Table 2.5 Hazard ratios for the risk of first maternal absence by cause - children born into single-mother families

	All Cause	Death	Migration	Relocation	Formation
Male child	0.93	0.87	1.09	0.88	0.80
	(0.06)	(0.28)	(0.12)	(0.15)	(0.09)
Child's birth order	1.02	1.35	1.02	1.01	0.89
	(0.04)	(0.22)	(0.06)	(0.09)	(0.07)
Mother's age	0.92***	0.97	0.91***	0.96	0.89***
	(0.01)	(0.05)	(0.01)	(0.02)	(0.02)
Mother's education	1.00	0.99	1.01	1.02	0.99
	(0.01)	(0.04)	(0.02)	(0.03)	(0.02)
Mother's Occupation (unemployed)					
Agriculture	1.19	0.44	1.08	1.06	1.53**
	(0.11)	(0.22)	(0.16)	(0.25)	(0.23)
Employed	1.29**	1.36	1.07	1.49	1.40*
	(0.12)	(0.57)	(0.16)	(0.31)	(0.20)
Wealth Quintile (lowest)					
Low	1.05	0.79	0.91	1.12	1.03
	(0.12)	(0.41)	(0.17)	(0.32)	(0.19)
Middle	1.04	1.11	1.16	1.07	0.88
	(0.12)	(0.59)	(0.20)	(0.29)	(0.16)
High	1.09	0.85	1.25	1.08	0.95
	(0.12)	(0.54)	(0.22)	(0.29)	(0.17)
Highest	1.00	1.58	0.91	1.05	0.95
	(0.12)	(0.75)	(0.17)	(0.30)	(0.17)
Co-resident adults	0.94***	1.01	0.98	0.69***	0.99
	(0.01)	(0.06)	(0.02)	(0.05)	(0.02)
Children	5,805	5,805	5,805	5,805	5,805
Events	1,099	57	448	195	399
Deviance	10,470.55	889.46	4,937.97	2,631.14	4,467.98
Child age intervals	y[0-8], (8-10]	y[0-1], (1-3],(3-10]	y[0-7], (7-10]	y[0-8], (8-10]	y[0-6], (6-10]

Results for piecewise exponential models. Robust standard errors, including weights for sibship size, in parentheses. y indicates yearly age intervals for the range specified. * p<.05, ** p<.01, *** p<.001

Consistent with the results from the logistic regression, children with older mothers are less likely to experience maternal absence due to all causes, and for each cause except death. There are no observed associations between maternal education and occupation for the cause-specific analyses of single-mother absence. Notably, among children born into single-mother households

there is no association between wealth and maternal absence overall or due to any cause individually (Table 2.4). Interestingly, there is a positive but non-significant wealth gradient for maternal absence due to child relocation. While the results are not significant, the direction of the association highlights the variation in the predictors of absence for maternal absence for children born to two-parent families as compared to children born to single-mothers. Finally, consistent with the results for children born to two-parent families, the co-residence of additional adults is associated with a significantly lower hazard of maternal absence due to child relocation. Again, this suggests that when there are kin available to help with childrearing, mothers are less likely to out-foster their children.

2.5 Discussion

Parental absence in Rufiji, Tanzania is common, with 25% and 40% of children born into two-parent families experiencing maternal and paternal absence by age 10, respectively. These estimates are roughly consistent with figures from other studies in Tanzania and across the region (see Monasch and Boerma 2004 for cross-sectional estimates in Tanzania; also Chuong and Operario 2012; Hampshire et al. 2014; Marteleto 2013). Strikingly, the majority of children born into single-mother households – all of whom have an absent father at birth – experience maternal absence as well by the age of 10.

Absence occurs early, usually by age 5; this finding is particularly noteworthy, as other studies have demonstrated the importance of early childhood in shaping children's health and development (Brooks-Gunn and Duncan 1997; Côté et al. 2009; Duncan et al. 1994). Furthermore, for the majority of children experiencing absence it is permanent. This is contrary to recent findings on family instability in the region, which document multiple spells of absence

throughout childhood (Goldberg 2013; Marteleto et al. 2012). This discrepancy may be due to differences in the settings, as both cited studies examine South Africa, which has a particular pattern of circular labor migration. In addition, the permanence of absence observed here may be due to an inability to capture absences and returns of short duration in the Rufiji HDSS because of the definition of migration employed.

The cause composition of absence depends on the parent examined, as well as the family structure into which the child is born. Nevertheless, across two-parent and single-mother households, and maternal and paternal absence, absence due to parental death is the least common cause. Although the literature on parental absence emphasizes orphanhood, the majority of children who experience parental absence do so for other reasons. Migration and marriage practices play an important role in shaping patterns of parental absence. Undoubtedly these are qualitatively different kinds of absence, and there is reason to suspect that the permanent absence of a parent through death is more detrimental to children than a temporary absence due to fostering or migration. However, since social support programs for "vulnerable" children are typically geared towards orphans, this kind of absence may actually be associated with increases in resources available for children. Furthermore, the analyses here suggest the other causes of absence also result in permanent non-residence of the parent.

The demographic and socioeconomic patterns in children's risk of parental absence depend on the group at risk, the parent of interest, and the cause of absence. Caregiving resources, as measured by the number of co-resident adults, are positively associated with volitional types of absence over which the parent has control, such as migration, union dissolution and union formation. This suggests that the availability of caregiver substitutes may play a role in influencing parental decisions and ability to leave the household. Alternatively,

additional adults may move into the household in preparation for the anticipated departure of a parent. More broadly, these findings suggest that parents factor the wellbeing and circumstances of their children into their decisions to absent themselves. In contrast, children in households with more co-resident adults are less likely to experience maternal absence due to child relocation. Such variation in the association between kin support and absence underscores the importance of examining parental absence by cause. The analyses provide a detailed view of the relative magnitude of each type of absence, and a better understanding of the distinctiveness and similarity of the processes leading to each. These findings demonstrate the importance of considering individual causes of absence in relation to one another, and can help guide future research on the consequences of absence for children's wellbeing.

Chapter 3:

Parental Absence, Kin Presence, and Child Mortality in Tanzania

3.1 Introduction

The majority of contemporary research, policy programming, and popular press on children in sub-Saharan Africa focuses on orphanhood, primarily due to the high prime-age adult mortality of the AIDS epidemic (Crampin et al. 2003; Gregson et al. 1999; Hosegood et al. 2004, 2007; Nakiyingi et al. 2003). In general, research finds that orphans, particularly maternal orphans, fare worse than their counterparts with living parents on a wide range of outcomes (Ardington and Leibbrandt 2010; Case and Ardington 2006; Case et al. 2004; Evans and Miguel 2007). Yet recent research in the region demonstrates that children are at greater risk of experiencing parental absence due to reasons other than parental death, which accounts for less than 15% of children's overall experience of absence (Gaydosh 2015). While more children experience absence due to union status changes and migration, we know little about how these kinds of absence are associated with children's wellbeing in the African context (see Clark and Hamplová 2013; DeRose et al. 2014; Madhavan et al. 2014; Thiombiano et al. 2013 for recent exceptions). Different causes of parental absence represent varied experiences and may present distinct advantages or challenges for children, necessitating a cause-specific analysis of the consequences of parental absence.

In many societies in sub-Saharan Africa, childrearing responsibilities are shared across extended kin networks, and childcare is often accomplished by non-parental relatives (Castle 1995; Goody 1982; Hrdy 2007; Page 1989; Sear and Coall 2011). While there has been some concern in light of the AIDS epidemic as to the ability of the extended kin safety net to care for

rising numbers of orphaned children (Foster 2000; Madhavan 2004), children remain likely to live with family members other than their parents. The average household in sub-Saharan Africa is comprised of 2.5 adults and 2.75 children, suggesting that a substantial proportion of households contain non-parental adults (Bongaarts 2001; see also recent country specific estimates from Demographic and Health Surveys). This continuing centrality of the extended family is true not only in Africa, but in families across the developing and developed world (Bengtson 2001; Cherlin 2012; Gerstel 2011). Yet while many children live in households with non-parental, co-residential adults, the association between these adults' presence and child wellbeing is incompletely understood (Gage et al. 1997; Sear et al. 2002). This chapter advances our understanding of how parental absence is associated with child mortality by combining the analysis of multiple causes of absence with an examination of extended kin ties.

The chapter proceeds with a presentation of three theories of investment in children based on biological relatedness, returns to investment, and normative social expectations. Drawing from these theories, I argue for the importance of examining maternal and paternal absence separately and by reason for absence, as well as considering the role of extended kin. Using data from the Rufiji Health and Demographic Surveillance System in Tanzania, I employ survival analysis to examine how parental, kin and child co-residence are associated with child mortality. This chapter aims to answer three questions. First, is parental absence associated with child mortality? In answering this question, I consider which parent is absent, when, and for what reason, analyzing parental death, union status changes, and migration separately. Second, is the presence of kin associated with child mortality? I differentiate between laterally and vertically extended kin. Third, I explore the interaction between parental absence and kin presence, asking

whether the presence of kin moderates the association between parental absence and child mortality.

3.2 Background – Three Theoretical Guidelines for Investment in Children

The family structures in which children are raised and their relationship to caregivers shape the resources available to and invested in them (Case et al. 2000, 2001; Cherlin 1999; Hofferth and Anderson 2003). The presence or absence of particular family members may have implications for the amount of economic resources and time devoted to children, as well as the quality of supervision and childcare (Case et al. 1999; Chuong and Operario 2012; Sear and Mace 2008). Yet it is not only the presence of adults in the household that determines children's access to resources, but the willingness of these individuals to invest in children. This chapter draws from three theories of investment in children to understand the significance of different kinds of adult ties – parental and kin - for child survival in a rural area of Tanzania. While the theories make different predictions about who invests the most in children, and by extension how their presence or absence may influence child survival, the goal is not to adjudicate between the theories. The theories guide the analysis, underscoring the importance of differentiating between maternal and paternal absence, reasons for absence, and types of kin.

Biological Relatedness

The first theory of investment in children proposes that parents and kin are biologically motivated to provide for children; according to Hamilton's rule of biological relatedness, the quality of care a child receives from a given individual depends on their genetic closeness (Cox 2007; Hamilton 1964). Hamilton's rule predicts that parents, who share half of their genetic makeup with their biological children, are more motivated to provide for their children than more

distantly related relatives. Grandparents, aunts and uncles share roughly one quarter of their genes with children, and should therefore invest in ways similar to each other. Indeed, Case and colleagues (2004) find that schooling outcomes for orphans are positively associated with the degree of the child's relatedness to the household head.

However, as biological fathers and mothers are equally related to their children, Hamilton's rule does not account for the differential effects of paternal and maternal absence documented in the literature. Here evolutionary theorists and biological anthropologists suggest that reproductive certainty plays a role in shaping investment in children (Draper and Harpending 1982; Heath 2003). Only mothers can be certain of their genetic relatedness to their children, and thus they invest more heavily in their children than fathers. This theory is supported in studies of orphans, which find consistently large effects of maternal death on child mortality but no association between paternal death and child outcomes (Case and Ardington 2006; Reher and Gonzalez-Quinones 2003; Ronsmans et al. 2010). Similarly, maternal relatives would be more motivated to care for children than paternal relatives (Heath 2003). Evidence from biological anthropology suggests that the presence of maternal grandmothers is associated with greater child survival (Sear et al. 2002), while the presence of paternal grandmothers almost doubles the risk of child death (Beise and Voland 2002).

In sum, the theory of biological relatedness predicts that biological parents invest more heavily in children than other extended kin, making it necessary to differentiate between parents and other kin. This theory does not emphasize differentiation between lateral and vertical kin as I do in the chapter, but instead predicts that because both are equally related to children they should invest equally. Rather, the important distinction, according to reproductive certainty, is

between maternal and paternal kin. This prediction supports the separate analysis of maternal and paternal absence; however in the analyses I am unable to measure the lineage of extended kin.

Returns to Investment

The second theory of investment in children argues that individuals invest in children according to their expected returns. In sub-Saharan Africa, norms of shared childrearing and reciprocity shape both who has the responsibility to care for children and the right to claim assistance from them (Goody 1982; Verhoef and Morelli 2007). Parents are not the only ones who can expect returns to investment in children; when extended kin foster children they gain access to their domestic labor as well as future earnings (Bledsoe and Isiugo-Abanihe 1989; Goody 1982). Grandparents face particularly strong expectations and incentives to care for children. In the event of parental absence, grandparents are the expected and preferred caregivers (Kasedde et al. 2014; Ksoll 2007; Notermans 2004; Page 1989; Whyte and Whyte 2004). By taking in grandchildren, grandparents reinforce their ties to their own children, allowing them to more readily request assistance in exchange for raising the grandchild (Bledsoe and Isiugo-Abanihe 1989).

In addition to practices of child fostering that allow extended kin to claim future resources from children, lineage systems also shape the expected returns to investment. In the site of study, the ethnic groups of Ndengereko, Makonde and Sukuma follow patrilineal kinship systems, where the father and his family have the greatest claim over children. The return to investment theory predicts that, in a patrilineal, shared childrearing system such as Rufiji, fathers and paternal relatives would invest most heavily in children. However, empirical support for this hypothesis is contradictory; in a comparative study of communities by lineage system, Huber and Breedlove (2007) find that the greater the reliance on patrilineal groups, the larger the

investments of paternal kin. In contrast, Sear (2008) finds the opposite in a matrilineal community in Malawi, where child mortality is higher in households with female maternal relatives.

The theory of returns to investment underscores the need to consider extended kin in the study of child wellbeing. Because extended kin can also expect to receive returns to their investment in children, it is important to include them, as well as parents, in the present analysis. Furthermore, as grandparents face the greatest responsibilities and incentives, it is important to differentiate between vertically and laterally extended kin, a distinction I am able to draw in the analysis. Returns to investment are predicted to vary by lineage with greater investment by paternal kin in a patrilineal system. As stated, I am not able to differentiate between maternal and paternal kin, a limitation discussed further in light of the findings.

Normative Social Expectations

The third theory of investment in children suggests that parents and kin invest in children according to different normative social expectations. Insofar as lineage systems shape the roles and responsibilities of kin, as well as adult children's responsibilities to provide for elderly kin, the returns to investment theory is linked closely to normative social expectations. Furthermore, gendered norms of parenting may explain differential investment of mothers and fathers (Hays 1998). There is evidence from contemporary and historical American and African populations that living with maternal grandmothers and sisters is positively associated with child health and survival, whereas living with male relatives shows no association (Gibson and Mace 2005; Hadley 2004; Sear et al. 2002).

Beyond predicting gender differences in investment, the theory of normative social expectations underscores the importance of differentiating between the causes of parental

absence. When the circumstances surrounding parental absence fall outside of the established normative expectations of parenting, parent-child relationships may suffer. For example, in the United States, scholars draw on this theory to explain observed differences in outcomes of children of married parents compared to divorced, remarried, cohabiting and unmarried parents (Gibson-Davis 2008). They argue that non-married or step-parenting relationships suffer from "incomplete institutionalization", whereby expectations and norms are less formalized or more constrained (Cherlin 1978; Hofferth and Anderson 2003). Furthermore, some types of parental absence may violate or reinforce normative expectations of parenting, and therefore be differentially associated with child mortality. For instance, Parreñas (2008) suggests that paternal migration is consistent with gendered parenting expectations, wherein the father is expected to provide for the family and the mother is expected to care for the children. Indeed, there is evidence from previous research that paternal migration is associated with improved child outcomes, whereas maternal migration is associated with worse child outcomes (Collinson 2008; Graham and Jordan 2011; Jingzhong and Lu 2011).

The theory of normative social expectations supports the separate analysis of maternal and paternal absence, as the theory predicts that females invest more in children than males. Furthermore, as some reasons for absence may be inconsistent with normative expectations of parenting, and therefore differentially associated with child mortality, in this chapter I distinguish between death, union status changes, and migration as causes of parental absence.

3.3 Data and Methods

To examine the relationship between family structure and child mortality from birth to age five, I use data from the Rufiji Health and Demographic Surveillance System (HDSS) in Tanzania.[23] The Rufiji HDSS is an ongoing surveillance system that follows an open cohort of approximately 110,000 individuals living in an area of 1,800 square kilometers. Established in 1998 with an initial census of all individuals living in the area, the surveillance team visits all households three times per year to collect the residency and vital status of every registered member. New members are added through birth or in-migration, and members exit through death or out-migration. Note that migration events are defined as moves in or out of the site that are documented at two consecutive household visits; as a result, absences, entries, or returns of durations less than four months are not captured. Internal migration from one household to another within the site may be of any duration. More detailed information on this particular demographic surveillance system, as well as the data collection platform more generally, are available elsewhere (Mrema et al. 2015; Sankoh and Byass 2012; Ye et al. 2012).

Drawing from the dates of births, deaths and migrations, I construct exposure episodes for all children born in the site from 1999 – 2011. Multiple births (twins) are excluded from the analysis due to their elevated mortality risk (Justesen and Kunst 2000). Exposure begins at birth and ends either with an event, here the death of the child, or with censoring. Censoring refers to a situation where the child is no longer included in the analysis, or in demographic terms, exposed to the risk of death. This can occur in three instances – when the child turns five, if the child moves out of the site, and at the end of observation, here December 31, 2011. Children who exit and return to the site before age five are included and contribute multiple periods of exposure, although their period outside is excluded.

[23] The Rufiji HDSS is managed by the Ifakara Health Institute.

Table 3.1 Sample Descriptive Statistics			
	Two-Parent	Single-Mother	Migrant Father
Child Characteristics			
Male	50%	50%	50%
Birth cohort			
1999-2002	33%	28%	28%
2003-2007	41%	39%	43%
2008-2011	26%	33%	27%
Parental Characteristics at Birth			
Birth order			
1	12%	42%	20%
2 to 3	32%	27%	30%
4 to 5	24%	10%	21%
6+	31%	21%	30%
Maternal age	27.6 (7.1)	22.9 (7.4)	27.2 (7.8)
Maternal education			
No schooling	46%	31%	41%
Some primary	14%	22%	15%
Primary or greater	40%	47%	43%
Paternal age	40.0 (10.8)	-	38.1 (13.0)
Paternal education			
No schooling	29%	-	30%
Some primary	19%	-	19%
Primary or greater	52%	-	51%
Household Characteristics at Birth			
Asset index[a]	-0.11 (2.4)	-0.10 (2.3)	-.27 (2.3)
Number co-resident children under 5	2.7 (1.4)	2.6 (1.6)	2.3 (1.4)
Any co-resident adults	43%	86%	47%
Lateral	33%	70%	38%
Vertical	24%	57%	28%
Children	23,209	8,518	4,000
Mothers	11,864	6,743	2,897
Child Deaths	1,529	722	191

Percentages or means, with standard errors in parentheses. [a]The negative value for mean asset index score is due to the principal components method used to compile asset ownership data.

Approximately one-quarter of children born in the Rufiji HDSS do not have a co-resident father at birth. The majority of these children are born to unmarried mothers (hereafter referred to as single mothers), and the father is never co-resident. As such, I run the analyses separately for children born into two-parent households (n=23,209) and children born into single-mother households (n = 8,518) (Table 3.1). There are also 4,000 children who were born to married mothers with identifiable but non-resident fathers (likely migrant workers). While the number of

deaths in this group is too small to permit separate analysis, I include an indicator of this living arrangement in an analysis of living arrangement at birth (Table 3.2).

The predictors of interest are time-varying measures of maternal absence and paternal absence that indicate whether or not the parent resides in the same household as the child. Roughly one-quarter of children born into two-parent households experience maternal absence by age 10, and 40% experience paternal absence by the same age. Moreover, of the 25% of children born into single-mother families with an absent father at birth, nearly 70% of these children experience maternal absence as well by age 10. I differentiate between three reasons for absence: 1) death, when a parent no longer resides with the child because he/she has died; 2) marriage-related, when the parent or child moves out of the household within 6 months of a union status change (divorce, remarriage, or new marriage); and 3) migration,[24] when the parent or child moves out of the household not within 6 months of a union status change.

In addition to the influence of parents, I examine the role of extended kin by including a time-varying dichotomous measure of any co-resident non-parental adults. While not all co-resident adults are necessarily related to the child or to each other, I am unable to differentiate between relatives and non-related adults. Therefore, I use the term kin to refer to all adults in the household, and use the terms co-resident kin and co-resident adults interchangeably. Between 43-86% of children live with a non-parental adult at birth, depending on the parental living arrangement at birth (Table 3.1). I differentiate between lateral and vertical kin using the ages of the household members. Lateral kin are defined as men or women of reproductive age (18-49), and likely include aunts, uncles, or additional wives. This category may also include older siblings, although children often leave the parental household for education, work or marriage in late adolescence. Vertical kin are defined as age 50+ and likely include grandparents or other

[24] This may be migration to another household within the site, or migration outside of the surveillance area.

elderly household members. Children are slightly more likely to live with lateral kin than vertical kin at birth (Table 3.1).

All models include several controls for child, maternal and household characteristics that are established covariates of child mortality. I include an indicator for whether the child is male. To capture variation in child mortality trends and parental absence prevalence over time, all models include a measure of the child's birth cohort in three four-to-five year intervals: 1999-2002 (reference), 2003-2007, and 2008-2011. Using the pregnancy history of mothers, I construct a categorical measure of birth order, with a reference category of first birth. As child mortality is greatest at young and old maternal ages, measures of maternal age and maternal age squared are included. With a well-established link between maternal education and child health, I include a three category measure of mother's education separating no formal schooling (reference), some primary schooling,[25] and primary schooling completed or greater. For the two-parent sample, I include corresponding measures of age and education for the father. As these child and parental covariates are constant and data collection occurs multiple times per year giving field staff the opportunity to fill in incomplete information, missing data on these measures are minimal (Appendix 3.8).

At the household level, I include a time-varying measure of household wealth constructed from an asset ownership index using principal components analysis (Rutstein and Johnson 2004). Asset ownership data were collected in 2001, 2005 and annually from 2008 – 2011. Missing wealth data are imputed both forwards and backwards in time. After imputation, wealth data are completely missing for the households of approximately 2,000 children; these cases are not

[25] In Tanzania, primary school refers to grades 1-8.

included in the analysis.[26] Finally, to account for resource dilution and competition due to other young children in the home, I include a count measure of the number of children under five living in the household.

To examine the influence of parents and kin on child mortality, I rely on survival analysis, specifically piecewise exponential models. For this semi-parametric estimation I divide children's exposure episodes into intervals from 0 to 1 month, 1 to 6 months, 6 to 12 months, 12 to 24 months, and 24 to 60 months. These cutpoints capture distinct empirically documented periods of child mortality and include at least 100 deaths per interval (Appendix 3.1), an adequate number of deaths within each period to allow for estimation (UNICEF 2014; United Nations Inter-agency Group for Child Mortality Estimation 2014; Wardlaw et al. 2014).

The model makes three assumptions: 1) the baseline hazard is constant within each interval; 2) survival time of siblings is independent conditional on a shared frailty term for the mother, which controls for common, unobserved characteristics of the mother; and 3) the random effect for the mother has a gamma distribution with a mean of one. The model is expressed as

$$\lambda_{imj} = \theta_m \lambda_j \exp\{X_{imj}\beta\},$$

where λ_{imj} is the hazard of individual i of mother m in interval j, θ_m is a mother-specific random effect, λ_j is the baseline hazard in interval j, and X_{imj} is a vector of time-constant and time-varying covariates. The model also assumes that the effect of covariates (β) is the same at every age; however, I explore the validity of this assumption by including an interaction between indicators for parental absence and child age (Tables 3.3 and 3.4).

These data are particularly well-suited to study child mortality. Monitoring of children begins before birth, with pregnancies and pregnancy outcomes recorded at each visit. This

[26] Results are robust to multiple imputation for missing wealth data, including an indicator for missing wealth and including these cases in the analysis, and excluding all cases with any missing data. In robustness checks I also estimated models with a constant measure of wealth at the time of the child's birth; conclusions are unchanged.

prospective data collection minimizes several issues associated with retrospectively reported data that are commonly used to study child mortality (such as the Demographic and Health Surveys). In retrospective survey reporting, women may underreport child deaths, particularly at very young ages; this problem is minimized with prospective surveillance, as all reported pregnancies have a recorded outcome. Furthermore, in retrospectively reported data, women may conceal deaths of first born children, particularly if they remain childless (Ware 1984). Similarly, older women's reporting may suffer from "recall lapse", failing to report on infant deaths early in their reproductive careers, or misreporting children's ages at death (Ware 1984). Finally, many surveys sample ever-married women, ignoring the mortality experiences of children born out of wedlock.

While the Rufiji HDSS collects detailed, prospective data on all births and deaths in a given area, the data are not nationally representative, leading to concerns about the external validity of the findings. Furthermore, there have been two interventions implemented in the site targeted at improving health services; from 1998 – 2003, the Ministry of Health implemented the Tanzania Essential Health Intervention Project, and starting in 2006, the Ifakara Health Institute began the ongoing Empower Project. Both interventions may have contributed to the overall decline in infant and child mortality in the site over the last decade.

Despite these limitations, the results are relevant for other contexts throughout the region and other developing countries with similar cause of death and disease profiles and high but decreasing levels of under-five mortality. Under-five mortality levels and trends in the area are similar to national estimates. In the Rufiji HDSS, under-five mortality is high but declining, from 137 deaths per 1000 live births in 1999, to 68 deaths per 1000 live births in 2011 (author's calculations). Nationally, the under-five mortality rate is at a similar level and following a similar

pattern, at 143 deaths per 1000 live births for 1996-2000, and 81 deaths per 1000 live births for 2006-2010 (National Bureau of Statistics and ICF Macro 2011). The country has experienced increased coverage of important child-survival interventions over this period, including vitamin A supplementation, immunization, use of insecticide-treated nets, and exclusive breastfeeding (Masanja et al. 2008). The leading cause of death for children under five is malaria, followed by febrile illness, pneumonia, and malnutrition. Transmission of HIV from mother to child has declined across the region (United Nations Children's Fund 2013), and AIDS related deaths account for a very small share (less than 2%) of child mortality in the site (author's calculations).

3.4 Results

Parental absence and child mortality

While the majority of children are born into two-parent families, roughly one-quarter of children are born to single mothers, and another 10% have married mothers with non-resident fathers at birth. Table 3.2 presents piecewise exponential estimates for the association between living arrangement at birth and child mortality. Compared to children born into two-parent households, children born to single mothers with an absent father at birth face a 46% higher risk of mortality. Conversely, children born to married mothers with absent migrant fathers at birth face a 33% lower risk of mortality. This translates into predicted infant mortality rates of 54 per 1000 live births for children born into two-parent households, 83 per 1000 live births for children born to single-mother households, and 37 per 1000 live births for children born to married mothers and identifiable, non-resident (migrant) fathers, respectively (Table 3.3). This association is not explained by differences in wealth or co-resident adults.

Table 3.2 Hazard ratios for the risk of child mortality by living arrangement at birth	
Living arrangement at birth (two-parent)	
Single mother, absent father	1.46***
	(0.08)
Married mother, migrant father	0.67***
	(0.05)
Male child	1.07
	(0.04)
Mother's age	0.98
	(0.02)
Mother's age squared	1.00
	(0.00)
Birth order (first)	
2 to 3	0.96
	(0.07)
4 to 5	0.95
	(0.08)
6+	1.13
	(0.09)
Mother's education (none)	
Some primary	0.93
	(0.06)
Primary or higher	0.91
	(0.05)
Asset index	0.93**
	(0.00)
Children under 5	1.04*
	(0.02)
Any co-resident kin	1.22***
	(0.06)
Children	35,727
Mothers	19,071
Deaths	2,442
Theta	1.03
Results for piecewise exponential models. All models control for age group categories 0-1, 1-6, 6-12, 12-24, and 24-60 months. * p<.05, ** p<.01, *** p<.001	

Static measures of living arrangement at birth are informative, but fail to capture the dynamism of children's family structures over the course of childhood. Tables 3.4 and 3.5 present piecewise exponential estimates for the association between time-varying measures of parental absence and child mortality for children born into two-parent and single-mother households, respectively. In all models in Tables 3.4 and 3.5, controls for child, mother (and

father where appropriate), and household characteristics are included. Full results can be found in Appendices 3.2 and 3.3. Results for these covariates are consistent across models, and in the direction documented in the literature on child mortality. Importantly, differences in household wealth do not explain any of the associations between parental absence and child mortality.

Table 3.3 Predicted Infant and Under-Five Mortality Rates per 1,000 Live Births

	Infant Mortality	Under-Five Mortality
Living arrangement at birth [a]		
Two-parent	54 [44, 63]	94 [79, 110]
Single-mother	83 [67, 98]	144 [118, 169]
Migrant father	37 [29, 45]	65 [51, 79]
Parental co-residence [b]		
Both present	48 [36, 60]	82 [62, 102]
Mother absent	109 [73, 145]	182 [125, 239]
Father absent	70 [45, 95]	119 [79, 160]
Cause of absence [c]		
Both present	47 [35, 59]	80 [61, 100]
Maternal death	496 [317, 676]	695 [509, 882]
Maternal marriage	103 [47, 159]	172 [83, 261]
Maternal migration	66 [39, 94]	112 [67, 157]
Paternal death	82 [33, 131]	137 [58, 217]
Paternal marriage	50 [10, 91]	86 [19, 153]
Paternal migration	71 [43, 99]	120 [74, 165]

Predicted rates per 1000 live births, calculated from piecewise exponential regression results for a female, first-born child born between 1999-2002, to a 28 year-old mother and 40 year-old father, both with no schooling, in a household of mean wealth, residing with no other children under five years old. [a] Uses estimates from model in Table 3.2. [b] Uses estimates from Model 1 in Table 3.4. [c] Uses estimates from Model 3 in Table 3.4.

Table 3.4 Hazard ratios for the risk of child mortality by parental absence, children born into two-parent households

	Model 1	Model 2	Model 3
Maternal absence	2.35***		
	(0.29)		
Paternal absence	1.48**		
	(0.21)		
Maternal absence by child age (in months)			
0 to 6		1.66*	
		(0.41)	
6 to 12		2.90***	
		(0.76)	
12 or greater		2.58***	
		(0.43)	
Paternal absence by child age (in months)			
0 to 6		2.23	
		(0.95)	
6 to 12		2.36**	
		(0.65)	
12 or greater		1.20	
		(0.20)	
Maternal absence by cause			
Death			14.21***
			(3.34)
Marriage			2.26**
			(0.59)
Migration			1.42*
			(0.25)
Paternal absence by cause			
Death			1.76
			(0.52)
Marriage			1.07
			(0.42)
Migration			1.52*
			(0.25)
Children	23,209	23,209	23,209
Mothers	11,864	11,864	11,864
Deaths	1,529	1,529	1,529
Theta	1.16	1.16	1.17

Results for piecewise exponential models. Standard errors in parentheses. All models control for age group categories 0-1, 1-6, 6-12, 12-24, and 24-60 months, as well as child sex, birth order, cohort, parental age and education, household wealth, and number of under-five co-resident children. See Appendix 3.2 for full results. * p<.05, ** p<.01, *** p<.001.

As explained above, all three theories of investment in children suggest that maternal and paternal absence would be differentially associated with child mortality. In Table 3.4, Model 1, for children born into two-parent households I differentiate between maternal and paternal absence; maternal absence is associated with a risk of child mortality more than twice as high as when the mother is present.[27] The risk of child mortality is 48% higher when children have an absent father compared to a co-resident father. This translates into predicted infant mortality rates of 48 per 1,000 live births when both parents are present, 109 when the mother is always absent, and 70 when the father is always absent (Table 3.3).[28] These findings are consistent with theories of reproductive certainty and normative social expectations that predict that mothers invest more in children than fathers, and therefore mothers' absence would have a greater association with child mortality. Again, all models include a measure of household wealth, which does not explain the association between absence and child mortality.

In addition to accounting for parental absence, it is also important to consider the timing and cause of children's experience of separation from the parent. In Model 2 (Table 3.4), I investigate whether the influence of parental absence depends on the child's age at the time of absence by interacting parental absence and the age of the child. Compared to children with a present mother, mortality is elevated at all ages when a child has an absent mother; the association is of the greatest magnitude for children aged 6-12 months with an absent mother. For paternal absence, the same age interval is associated with the greatest elevation in the risk of child mortality; the association is not significant for children aged 0-6 and 12 or more months.

[27] In robustness checks, I investigate whether this association is driven by the loss of the mother during breastfeeding by restricting the analysis to children over age two; the strong association between maternal absence and child mortality remains, even among weaned children.

[28] Predicted rates for a female first-born child born between 1999-2002, to a 28 year-old mother and 40 year-old father, both with no schooling, in a household of mean wealth, residing with no other children under five. Rates calculated using piecewise exponential results.

This may indicate a period of particular sensitivity to parental absence between 6-12 months, although the hazard ratio is insignificant but of almost the same magnitude for 0-6 months, so the period of sensitivity may be in the first year. Additional research, particularly regarding cause of death, is needed to fully explore this finding. Previous research demonstrates that diarrheal disease is a particularly common cause of death in this interval (Caulfield et al. 1999; Gulati 1967), which suggests that weaning, feeding and nutrition may serve as mechanisms underlying this association.

While the findings demonstrate an association between parental absence and child survival that depends on the age of the child at absence, the analyses do not account for the different reasons for absence. In Model 3 (Table 3.4), I include indicators of parental absence by cause: death, union status changes (marriage), and migration. Due to a limited number of child deaths by cause, it is not possible to investigate a time-varying association between each cause of absence and child mortality. All causes of maternal absence are associated with a significant increase in the risk of child mortality. However, the magnitude of the association is much higher for maternal death than for maternal absence due to union status changes and migration. Maternal death is associated with a risk of child death more than 14 times as high as the risk of death for children with a living, co-resident mother. Maternal absence due to marriage is associated with more than double the risk of death, while maternal migration is associated with an approximately 40% increase in the risk of child death. This translates into predicted infant mortality rates of 47 per 1,000 live births when both parents are present, 496 when the mother is deceased, 103 when the mother absent due to marriage, and 66 when the mother is absent due to migration (Table 3.3).

Paternal death[29] and paternal absence due to union status changes are not significantly associated with child mortality (Table 3.4, Model 3). However, paternal migration is significantly associated with a 52% higher risk of child mortality compared to children with co-resident fathers. This translates into predicted infant mortality rates of 47 per 1,000 live births when both parents are present, and 71 when the father is absent due to migration (Table 3.3). Consistent with the theory of normative social expectations, the reason for absence is important, with differential associations depending on the cause. I will discuss these patterns further in the following section.

Table 3.5 presents estimates for an analysis of children born into single-mother households; the results for maternal absence are consistent with those among children born into two-parent households. In Model 1, maternal absence is associated with a twofold increase in the risk of mortality. While the magnitude is similar for the increase associated with maternal absence for children born into two-parent households, keep in mind that these children face an elevated risk of mortality associated with being born into a single-mother household. In Model 2, I investigate the interaction of maternal absence with child age, and again find that the significant increase in the risk of child mortality with maternal absence exists at all ages, and is of the highest magnitude when the child is aged 6-12 months. Finally, Model 3 decomposes overall maternal absence into absence due to death, marriage and migration. As with children born into two-parent families, maternal absence due to death is associated with the greatest increase in the risk of death. Maternal absence due to migration is associated with a more than two-fold increase in the risk of child death, and the risk is elevated by 70% when mothers are absent due to

[29] While the hazard ratio for paternal death is not statistically significant, the magnitude is even greater than that for paternal migration. This may be a result of not having a sufficient power to detect a relationship given the rarity of paternal death.

migration. All causes of maternal absence for children born into single-mother households are associated with an increased risk of child death.

Table 3.5 Hazard ratios for the risk of child mortality by parental absence, child born into single-mother households

	Model 1	Model 2	Model 3
Maternal absence	2.05***		
	(0.27)		
Maternal absence by child age (in months)			
0 to 6		1.74*	
		(0.38)	
6 to 12		3.53***	
		(0.94)	
12 or greater		1.88***	
		(0.35)	
Maternal absence by cause			
Death			6.62***
			(2.24)
Marriage			2.24**
			(0.59)
Migration			1.70***
			(0.27)
Children	8,518	8,518	8,518
Mothers	6,743	6,743	6,743
Deaths	722	722	722
Theta	1.6	1.61	1.6

Results for piecewise exponential models. Standard errors in parentheses. All models control for age group categories 0-1, 1-6, 6-12, 12-24, and 24-60 months, as well as child sex, birth order, cohort, parental age and education, household wealth, and number of under-five co-resident children. See Appendix 3.3 for full results. p<.10, * p<.05, ** p<.01, *** p<.001.

Kin co-residence and child mortality

The results thus far demonstrate that the absence of parents is, in general, associated with worse child survival. However, children are likely to live with a variety of other adults and family members aside from parents, and parents are more likely to exit the household for marriage or migration related reasons when there are other non-parental adults residing in the household (Gaydosh 2015). Tables 3.6 and 3.7 present estimates for piecewise exponential models including time-varying covariates for kin co-residence for children born into two-parent

households and single-mother households, respectively. All models include dichotomous variables for kin co-residence.[30] In all models, controls for child, mother (and father where appropriate), and household characteristics are included. Results for these covariates are consistent across models, and in the direction documented in the literature on child mortality. Full results can be found in Appendices 3.4 and 3.5.

In Model 1 (Table 3.6), I include a variable indicating whether the child resides with any non-parental adults, which is associated with a 15% increase in the risk of child mortality net of all other predictors. While this evidence suggests that kin are associated with poorer child survival, it is necessary to include an interaction between parental absence and kin co-residence in order to test whether kin moderate the association between parental absence and child mortality. In Model 2, I include interactions between maternal and paternal absence and any kin co-residence; for maternal absence, the interaction is negative and significant, suggesting that the increase in the hazard of mortality associated with maternal absence is reduced when the child lives with other adult kin. There is no significant evidence of such a buffering association in the event of paternal absence.

I further investigate the role of extended kin by differentiating between lateral and vertical kin ties in Model 3; co-residence with lateral kin is not significantly associated with child mortality, while co-residence with vertical kin is associated with a 21% increase in the risk of child death. This finding is contrary to what is predicted by the theory of biological relatedness, which suggests similar levels of investment between both types of extended kin. This is also in contrast to predictions derived from the theory of returns to investment, which suggests that grandparents have more to gain from investing in children, and vertical kin would thus be associated with better child survival. In Model 4, I interact kin by type with parental

[30] Results are robust to the use of count variables for the number of co-resident kin.

absence. The results are consistent with the moderating association of overall kin and maternal absence found in Model 2, but are not statistically significant. There is no evidence that the moderating role of kin differs by kin type. Similar to the findings for any kin, there is no evidence of a moderating effect of kin for paternal absence.

Co-residence with any kin is not associated with child mortality for children born into single-mother households (Table 3.7, Model 1). There is no evidence of a moderating role of any kin in maternal absence (Model 2). Differentiating kin by type, co-residence with vertical kin is associated with a 29% elevated risk of death (Model 3). Similar to the results for children born into two-parent households, in Model 4 the interactions between maternal absence and kin co-residence by type are not statistically significant. However, the hazard ratios for vertical kin co-residence (1.23 and 1.29) and the interaction term between maternal absence and lateral kin are roughly the same size (.61 and .73) for the two-parent and single-mother samples (Tables 3.6 and 3.7, Model 4), suggesting that there may be important variation by type of kin. While the current analysis may not have sufficient statistical power to establish significance, this differentiation by kin type and parental absence is a fruitful area for future research.

Table 3.6 Hazard ratios for the risk of child death by kin presence, children born into two-parent households

	Model 1	Model 2	Model 3	Model 4
Maternal absence	2.28***	3.46***	2.31***	3.13***
	(0.29)	(0.66)	(0.29)	(0.57)
Paternal absence	1.44**	1.77*	1.44**	1.83**
	(0.20)	(0.40)	(0.20)	(0.38)
Any co-resident kin	1.15*	1.20**		
	(0.07)	(0.07)		
Maternal absence X any kin		0.52**		
		(0.13)		
Paternal absence X any kin		0.75		
		(0.21)		
Lateral			0.98	1.03
			(0.06)	(0.07)
Vertical			1.21**	1.23**
			(0.08)	(0.08)
Maternal absence X lateral kin				0.61
				(0.15)
Maternal absence X vertical kin				0.89
				(0.24)
Paternal absence X lateral kin				0.71
				(0.20)
Paternal absence X vertical kin				0.90
				(0.26)
Children	23,209	23,209	23,209	23,209
Mothers	11,864	11,864	11,864	11,864
Deaths	1,529	1,529	1,529	1,529
Theta	1.16	1.14	1.16	1.16

Results for piecewise exponential models. Standard errors in parentheses. All models control for age group categories 0-1, 1-6, 6-12, 12-24, and 24-60 months, child sex, birth order, cohort, parental age and education, household wealth, and number of under-five co-resident children. See Appendix 3.4 for full results. * p<.05, ** p<.01, *** p<.001.

Table 3.7 Hazard ratios for the risk of child death by kin presence, children born into single-mother households

	Model 1	Model 2	Model 3	Model 4
Maternal absence	2.05***	2.22*	2.05***	2.48***
	(0.27)	(0.72)	(0.27)	(0.65)
Any co-resident kin	1.17	1.19		
	(0.14)	(0.15)		
Maternal absence X any kin		0.91		
		(0.32)		
Lateral			1.10	1.14
			(0.10)	(0.11)
Vertical			1.29**	1.29**
			(0.11)	(0.12)
Maternal absence X lateral kin				0.73
				(0.20)
Maternal absence X vertical kin				1.05
				(0.27)
Children	8,518	8,518	8,518	8,518
Mothers	6,743	6,743	6,743	6,743
Deaths	722	722	722	722
Theta	1.6	1.62	1.59	1.59

Results for piecewise exponential models. Standard errors in parentheses. All models control for age group categories 0-1, 1-6, 6-12, 12-24, and 24-60 months, child sex, birth order, cohort, parental age and education, household wealth, and number of under-five co-resident children. See Appendix 3.5 for full results. * p<.05, ** p<.01, *** p<.001.

Robustness and limitations

Despite the consistency of the relationship between parental and kin co-residence and child mortality across different family structures at birth, even after controlling for all available confounders the possibility remains that the observed associations may result from unobserved heterogeneity. Unobserved characteristics of the parent may explain both their absence and the elevated mortality risk of their children. To address this possibility, in robustness checks I estimate Cox proportional hazard models including fixed effects for the mother (Appendix 3.6) and father (Appendix 3.7), comparing siblings with different experiences of absence. The strong association between maternal absence and child mortality remains, and the magnitude is even larger in the fixed effects models than in the full sample. For children of the same father,

instances of paternal absence are not significantly associated with child mortality, although the direction of the relationship is consistent with evidence from the full sample.

While the fixed-effects results demonstrate the robustness of the findings to time-invariant unobserved characteristics with time-invariant effects, the possibility of unobserved heterogeneity remains. As such, the associations presented should not be interpreted causally. The circumstances that lead to parental absence may simultaneously influence child health and mortality, as well as kin co-residence. Furthermore, it may not be the absence of the parent *per se*, but events that lead up to absence that determine child mortality.

There is limited evidence that extended kin are able to partially offset the negative consequences associated with maternal absence for child mortality. Yet co-residence with vertical kin is associated with higher child mortality. It is possible that kin may move into the household when a child is ill prior to child death in order to assist with childcare, or that kin move into the household in preparation for the departure of a parent. Results are robust to the use of a constant measure of kin co-residence at birth to account for this limitation of the time-varying measure.

3.5 Discussion

This research demonstrates the importance of the co-residence of both parents and non-parental kin for child survival. Consistent with both the theories of biological relatedness and normative social expectations, the magnitude of the association between maternal co-residence and child mortality is greater than paternal co-residence. However, even in a context of shared childrearing where both parents and extended kin can expect returns from their investment in children, the

presence of parents in the household remains influential and the influence of parent-child ties predominate over kin-child ties.

While the analysis does not account precisely for co-residence with grandparents, it may be assumed that many vertical kin are grandparents. I do not find a protective influence of grandparents as documented in the literature (Gibson and Mace 2005; Sear and Mace 2008). However, the vertically extended kin in the analysis may be the in-laws to the mother, and the expected association between paternal kin and child health is less clear (Beise and Voland 2002; Castle 1995). Paternal grandmothers may undermine mothers' child care priorities due to conflict over appropriate childrearing practices; research on the daughter-in-law disadvantage suggests that mothers in patrilocal extended households may have less access to medical care and poorer nutrition (Allendorf 2013). Furthermore, this increase in child mortality associated with vertical kin may result from diminished capacity for income generation, care and supervision of children amongst older relatives, as well as increased demands on child labor in households headed by grandparents (Bledsoe and Isiugo-Abanihe 1989; Jingzhong and Lu 2011). Even very young children (under five) are expected to participate in domestic labor, including looking after younger children and fetching water (Notermans 2008).

Consistent with the theory of normative social expectations, the findings demonstrate variation in the causes of parental absence. The reason for absence is important in terms of its association with child mortality, and further research is needed to document the opportunities and challenges associated with different types of absence. Four findings in particular warrant additional attention.

First, even though maternal death is the least common cause of absence (Gaydosh 2015), and relatively few children become maternal orphans compared to those who experience parental

separation due to union status change and migration, maternal death is associated with the greatest elevation in the risk of child death. The fourteen-fold increase in the risk of child mortality is consistent with the size of the relationship documented in other research on maternal orphans; Clark and colleagues (2013) find that the odds of death for children in the month of their mother's death increase twelve-fold in a rural South African site. In Bangladesh, Ronsmans et al. (2010) document a maximum rate ratio of 25 when the mother dies between child ages two to five months. In the present study, the association of all other causes of absence and child mortality is small in comparison to the magnitude of the increase in risk associated with maternal death. It is likely that there is correlation between maternal health and child health, which may explain this strong relationship. While mother-to-child-transmission of HIV certainly plays a role, it is more likely that mothers in poor general health give birth to frailer, less healthy babies. Complications in childbirth may also result in correlated maternal and child death, as well as early weaning. Nevertheless, this is an important finding, and may justify policy interventions that have recently come under fire because they are aimed exclusively at orphans and exclude other vulnerable children (Adato et al. 2005). Parental death is a distinct type of absence, as it results in permanent absence and the complete loss of support from the parent. The lack of a significant association between paternal death and child mortality deserves further exploration, although this is a common finding in the literature on orphanhood (Ardington and Leibbrandt 2010; Case and Ardington 2006; Reher and Gonzalez-Quinones 2003).

Second, while virtually all types of absence examined are associated with increased child mortality, one type of absence is actually associated with better child survival – the absence of married and identifiable fathers at birth, who are likely labor migrants who live away from the household of birth either permanently or for great lengths of time. Interestingly, while these

children have a lower risk of child mortality, paternal migration for children born into two-parent households is associated with a higher risk of child mortality. These findings suggest differentiated forms of male migration with different social expectations, and deserve further study. Several other studies have found a positive influence of paternal migration on child health and survival (Donato and Duncan 2011; Gumbo 2008; Hildebrandt et al. 2005; Kanaiaupuni and Donato 1999; Nobles 2011), as well as on education (Lloyd and Blanc 1996; Townsend et al. 2002). Many attribute these positive relationships to the receipt of remittances from migrant fathers (Donato and Duncan 2011; Frank 2005; Lu and Treiman 2007, 2011). However, in the present study this association between paternal migration and child mortality is not explained by differing levels of household wealth. This may be due to a lack of sensitivity in the measure of wealth to remittance income; there are no data available on remittances specifically.[31] It is also likely that this relationship operates through other mechanisms beyond monetary remittances. Previous studies have documented social remittances associated with migration, including the diffusion of health knowledge and technologies, which may improve child health (Frank 2005; Levitt 1998; Lindstrom and Muñoz-Franco 2005, 2006).

In addition, the absence of the father from the household may increase the autonomy of the mother, allowing her more control over the allocation of household resources (Yabiku et al. 2012). Indeed, in other studies of household expenditures there is evidence that women spend money differently than men (Gummerson and Schneider 2013), and biological mothers spend more money on children than stepmothers (Case et al. 1999). Kenney (2008) finds that children are less likely to experience food insecurity when income is controlled by their mother than when it is controlled by their father. Similarly, Lundberg and Pollak (1996) find that children's consumption is greater when money is controlled by mothers. Therefore, even in the absence of

[31] Recall the wealth index is constructed from an index of item ownership, mostly durable goods.

additional resources, sustained paternal migration may increase the resources devoted to children, increasing their chances of survival. Finally, as extended paternal migration may result in the physical separation of the mother and father, it is possible that it decreases fertility, increasing birth intervals, and reducing the likelihood of additional younger siblings competing for resources.

Third, it is noteworthy that while paternal absence at birth due to migration is associated with a lower risk of child mortality, paternal and maternal absence due to migration following birth are associated with an increased risk. There is empirical evidence of a negative association between maternal migration and child wellbeing (Collinson 2008; Jingzhong and Lu 2011). As mentioned earlier, Parreñas (2008) suggests that paternal migration is beneficial because it is consistent with gendered expectations of parenting. By extending this theory it may be postulated that, as maternal migration is inconsistent with expectations of mothering and caregiving, it may have the opposite association. Graham and Jordan (2011) echo that in patriarchal societies, social norms regarding women's role as mothers inform children's expectations of who will care for them, and thus intensifies their sense of loss if the mother migrates. Different push factors associated with male and female migration may also help explain the differential association of paternal and maternal migration. For men, selection into migration is associated with beneficial characteristics, with those who are left behind as the least employable (Madhavan et al. 2014). Remaining at home is a sign of economic failure (DeRose et al. 2014). For women, selection into migration may be associated with less favorable characteristics, and the characteristics that compel mothers to leave their very young children may also make these children more likely to die. Finally, it is possible that any positive gains from maternal migration are simply overshadowed by the negative consequences of lacking maternal care.

Fourth and finally, in contrast to the protective association between married identifiable fathers absence at birth and child mortality, paternal absence at birth due to non-marital childbearing is associated with an elevated risk of child mortality. The proximate determinants of child mortality necessitate that the influence of the absence or presence of adults would operate through mechanisms such as environmental contamination, nutrition, injury, and illness control (Mosley and Chen 1984). Levine and Levine (1981) find evidence that children of single and divorced mothers are disproportionately malnourished. In Kenya, the use of antenatal care is less consistent for unwanted pregnancies (Magadi et al. 2000), and in Tanzania, children of unmarried mothers are more likely to be stunted (Mamiro et al. 2005). However, the majority of studies of child health in sub-Saharan Africa focus on the children of married parents, despite the high incidence of non-marital childbearing and divorce. Nevertheless, the results here confirm those of Clark and Hamplová (2013), who, in one of the only contemporary studies of single motherhood in sub-Saharan Africa, find that children of single mothers have higher mortality than children of married mothers. This study highlights the need for further research on single motherhood in this context, as there is a poor understanding of the customs of care and support available to children born outside of wedlock. Further research is needed to better understand the ways in which parental and kin co-residence influence the proximate determinants of child mortality, perhaps through direct supervision or neglect.

This chapter demonstrates the importance of parents and extended kin in shaping the survival experiences of children. In particular, the findings underscore important variation in the timing and causes of absence, demonstrating that some circumstances of parental absence may actually present survival advantages for children. Furthermore, variation in the type of kin

deserves greater attention, and future research is needed with greater attention to distinctions between the ties that bind caregivers and children.

Appendix 3.1 Number of child deaths per age interval, by living arrangement at birth

Age interval (in months)	Two-parent	Single-mother
0 to 1	403	240
1 to 6	287	138
6 to 12	293	131
12 to 24	262	106
24 and up	284	107
Total	1,529	722

Appendix 3.2 Hazard ratios for the risk of child mortality by parental absence, child born into two-parent households

	Model 1	Model 2	Model 3
Maternal absence	2.35***		
	(0.29)		
Paternal absence	1.48**		
	(0.21)		
Maternal absence by child age (in months)			
0 to 6		1.66*	
		(0.41)	
6 to 12		2.90***	
		(0.76)	
12 or greater		2.58***	
		(0.43)	
Paternal absence by child age (in months)			
0 to 6		2.23	
		(0.95)	
6 to 12		2.36**	
		(0.65)	
12 or greater		1.20	
		(0.20)	
Maternal absence by cause			
Death			14.21***
			(3.34)
Marriage			2.26**
			(0.59)
Migration			1.42*
			(0.25)
Paternal absence by cause			
Death			1.76
			(0.52)
Marriage			1.07
			(0.42)
Migration			1.52*
			(0.25)
Male child	1.05	1.05	1.05
	(0.06)	(0.06)	(0.06)
Birth order (first)			
2 to 3	0.98	0.97	0.98
	(0.09)	(0.09)	(0.09)
4 to 5	0.97	0.97	0.98
	(0.11)	(0.11)	(0.11)
6+	1.15	1.15	1.17
	(0.13)	(0.13)	(0.14)
Birth cohort (1999-2002)			
2003-2007	0.80***	0.80***	0.80***
	(0.05)	(0.05)	(0.05)
2008-2011	0.66***	0.67***	0.67***
	(0.05)	(0.05)	(0.05)
Mother's age	0.99	0.99	0.99*
	(0.01)	(0.01)	(0.01)
Mother's age squared	1.00*	1.00*	1.00*
	(0.00)	(0.00)	(0.00)
Mother's education (none)			
Some primary	0.93	0.93	0.94
	(0.08)	(0.08)	(0.08)

Appendix 3.2 continued

Primary or higher	1.01	1.01	1.01
	(0.06)	(0.06)	(0.06)
Father's age	1.01*	1.01*	1.01*
	(0.00)	(0.00)	(0.00)
Father's age squared	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Father's education (none)			
Some primary	0.88	0.88	0.88
	(0.07)	(0.07)	(0.07)
Primary or higher	0.86*	0.86*	0.86*
	(0.06)	(0.06)	(0.06)
Asset index	0.93*	0.93*	0.93*
	(0.03)	(0.03)	(0.03)
Children under 5	1.03	1.03	1.03
	(0.02)	(0.02)	(0.02)
Children	23,209	23,209	23,209
Mothers	11,864	11,864	11,864
Deaths	1,529	1,529	1,529
Theta	1.16	1.16	1.17

Results for piecewise exponential models. All models control for age group categories 0-1, 1-6, 6-12, 12-24, and 24-60 months. * p<.05, ** p<.01, *** p<.001

Appendix 3.3 Hazard ratios for the risk of child mortality by parental absence, child born into single-mother households

	Model 1	Model 2	Model 3
Maternal absence	2.05***		
	(0.27)		
Maternal absence by child age (in months)			
0 to 6		1.74*	
		(0.38)	
6 to 12		3.53***	
		(0.94)	
12 or greater		1.88***	
		(0.35)	
Maternal absence by cause			
Death			6.62***
			(2.24)
Marriage			2.24**
			(0.59)
Migration			1.70***
			(0.27)
Male child	1.13	1.13	1.13
	(0.09)	(0.09)	(0.09)
Birth order (first)			
2 to 3	0.90	0.90	0.91
	(0.11)	(0.11)	(0.11)
4 to 5	0.86	0.86	0.88
	(0.15)	(0.15)	(0.15)
6+	0.97	0.97	0.97
	(0.13)	(0.13)	(0.13)
Birth cohort (1999-2002)			
2003-2007	0.58***	0.58***	0.58***
	(0.06)	(0.06)	(0.06)
2008-2011	0.61***	0.61***	0.61***
	(0.07)	(0.07)	(0.07)
Mother's age	1.01	1.01	1.01
	(0.01)	(0.01)	(0.01)
Mother's age squared	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Mother's education (none)			
Some primary	0.91	0.91	0.90
	(0.10)	(0.10)	(0.10)
Primary or higher	0.76**	0.76**	0.76**
	(0.08)	(0.08)	(0.08)
Asset index	0.93	0.93	0.93
	(0.04)	(0.04)	(0.04)
Children under 5	0.94*	0.94*	0.94*
	(0.03)	(0.03)	(0.03)
Children	23,209	23,209	23,209
Mothers	11,864	11,864	11,864
Deaths	1,529	1,529	1,529
Theta	1.16	1.16	1.17

Results for piecewise exponential models. All models control for age group categories 0-1, 1-6, 6-12, 12-24, and 24-60 months. * p<.05, ** p<.01, *** p<.001

Appendix 3.4 Hazard ratios for the risk of child death by kin presence, children born into two-parent households

	Model 1	Model 2	Model 3	Model 4
Maternal absence	2.28***	3.46***	2.31***	3.13***
	(0.29)	(0.66)	(0.29)	(0.57)
Paternal absence	1.44**	1.77*	1.44**	1.83**
	(0.20)	(0.40)	(0.20)	(0.38)
Any co-resident kin	1.15*	1.20**		
	(0.07)	(0.07)		
Maternal absence X any kin		0.52**		
		(0.13)		
Paternal absence X any kin		0.75		
		(0.21)		
Lateral			0.98	1.03
			(0.06)	(0.07)
Vertical			1.21**	1.23**
			(0.08)	(0.08)
Maternal absence X lateral kin				0.61
				(0.15)
Maternal absence X vertical kin				0.89
				(0.24)
Paternal absence X lateral kin				0.71
				(0.20)
Paternal absence X vertical kin				0.90
				(0.26)
Male child	1.05	1.05	1.05	1.05
	(0.06)	(0.06)	(0.06)	(0.06)
Birth order (first)				
2 to 3	0.99	0.99	0.98	0.99
	(0.09)	(0.09)	(0.09)	(0.09)
4 to 5	0.99	0.99	0.98	0.98
	(0.11)	(0.12)	(0.11)	(0.11)
6+	1.17	1.18	1.16	1.17
	(0.14)	(0.14)	(0.14)	(0.14)
Birth cohort (1999-2002)				
2003-2007	0.80***	0.80***	0.80***	0.80***
	(0.05)	(0.05)	(0.05)	(0.05)
2008-2011	0.67***	0.67***	0.67***	0.67***
	(0.05)	(0.05)	(0.05)	(0.05)
Mother's age	0.99	0.99	0.99	0.99
	(0.01)	(0.01)	(0.01)	(0.01)
Mother's age squared	1.00*	1.00*	1.00*	1.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Mother's education (none)				
Some primary	0.93	0.93	0.93	0.93
	(0.08)	(0.08)	(0.08)	(0.08)
Primary or higher	1.01	1.01	1.01	1.01
	(0.06)	(0.06)	(0.06)	(0.06)
Father’s age	1.01*	1.01*	1.01*	1.01*
	(0.00)	(0.00)	(0.00)	(0.00)
Father's age squared	1.00	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)	(0.00)
Father's education (none)				
Some primary	0.88	0.87	0.87	0.87
	(0.07)	(0.07)	(0.07)	(0.07)

Appendix 3.4 continued

Primary or higher	0.86*	0.86*	0.86*	0.86*
	(0.06)	(0.06)	(0.06)	(0.06)
Asset index	0.93*	0.93*	0.94*	0.93*
	(0.03)	(0.03)	(0.03)	(0.03)
Children under 5	1.02	1.02	1.02	1.02
	(0.02)	(0.02)	(0.02)	(0.02)
Children	23,209	23,209	23,209	23,209
Mothers	11,864	11,864	11,864	11,864
Deaths	1,529	1,529	1,529	1,529
Theta	1.16	1.14	1.16	1.16

Results for piecewise exponential models. All models control for age group categories 0-1, 1-6, 6-12, 12-24, and 24-60 months. * p<.05, ** p<.01, *** p<.001.

Appendix 3.5 Hazard ratios for the risk of child death by kin presence, children born into single-mother households

	Model 1	Model 2	Model 3	Model 4
Maternal absence	2.05***	2.22*	2.05***	2.48***
	(0.27)	(0.72)	(0.27)	(0.65)
Any co-resident kin	1.17	1.19		
	(0.14)	(0.15)		
Maternal absence X any kin		0.91		
		(0.32)		
Lateral			1.10	1.14
			(0.10)	(0.11)
Vertical			1.29**	1.29**
			(0.11)	(0.12)
Maternal absence X lateral kin				0.73
				(0.20)
Maternal absence X vertical kin				1.05
				(0.27)
Male child	1.13	1.13	1.14	1.14
	(0.09)	(0.09)	(0.09)	(0.09)
Birth order (first)				
2 to 3	0.90	0.90	0.90	0.90
	(0.11)	(0.11)	(0.11)	(0.11)
4 to 5	0.87	0.87	0.88	0.88
	(0.15)	(0.15)	(0.15)	(0.15)
6+	0.97	0.98	0.99	0.99
	(0.13)	(0.13)	(0.13)	(0.13)
Birth cohort (1999-2002)				
2003-2007	0.58***	0.58***	0.59***	0.59***
	(0.06)	(0.06)	(0.06)	(0.06)
2008-2011	0.61***	0.61***	0.63***	0.63***
	(0.07)	(0.07)	(0.07)	(0.07)
Mother's age	1.01	1.01	1.01	1.01
	(0.01)	(0.01)	(0.01)	(0.01)
Mother's age squared	1.00	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)	(0.00)
Mother's education (none)				
Some primary	0.91	0.91	0.91	0.91
	(0.10)	(0.10)	(0.11)	(0.10)
Primary or higher	0.76**	0.76**	0.75**	0.75**
	(0.08)	(0.08)	(0.07)	(0.07)
Asset index	0.93	0.93	0.94	0.94
	(0.04)	(0.04)	(0.05)	(0.05)
Children under 5	0.94*	0.94*	0.93*	0.93*
	(0.03)	(0.03)	(0.03)	(0.03)
Children	8,518	8,518	8,518	8,518
Mothers	6,743	6,743	6,743	6,743
Deaths	722	722	722	722
Theta	1.6	1.62	1.59	1.59

Results for piecewise exponential models. All models control for age group categories 0-1, 2-5, 6-11, 12-23, and 24-60 months. * p<.05, ** p<.01, *** p<.001

Appendix 3.6 Hazard ratios for the risk of child mortality by parental absence, maternal sibling comparison

	Model 1	Model 2	Model 3	Model 4
Maternal absence	5.14***		5.63***	5.02*
	(2.33)		(2.62)	(3.39)
Paternal absence	0.98	0.90	0.97	0.98
	(0.51)	(0.49)	(0.50)	(0.51)
Maternal absence by cause				
Death		5.63*		
		(4.68)		
Marriage		2.10		
		(1.64)		
Migration		8.10**		
		(5.45)		
Any co-resident kin			0.70	0.69
			(0.25)	(0.25)
Maternal absence X any kin				1.22
				(1.04)
Male child	1.39	1.40	1.40	1.41
	(0.30)	(0.30)	(0.30)	(0.30)
Birth order (first)				
2 to 3	2.02	2.11	1.99	2.00
	(0.84)	(0.88)	(0.83)	(0.83)
4 to 5	2.30	2.49	2.23	2.23
	(1.36)	(1.49)	(1.32)	(1.32)
6+	3.20	3.58	3.28	3.30
	(2.25)	(2.57)	(2.31)	(2.33)
Birth cohort (1999-2002)				
2003-2007	1.70	1.69	1.72	1.73
	(0.66)	(0.65)	(0.67)	(0.68)
2008-2011	1.03	0.93	1.05	1.04
	(0.73)	(0.67)	(0.74)	(0.74)
Mother's age	0.91	0.90	0.91	0.91
	(0.09)	(0.09)	(0.09)	(0.09)
Mother's age squared	1.01	1.01	1.01	1.01
	(0.00)	(0.00)	(0.00)	(0.00)
Father's age	0.97	0.98	0.97	0.96
	(0.07)	(0.07)	(0.07)	(0.07)
Father's age squared	1.00	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asset index	0.70	0.66	0.69	0.69
	(0.22)	(0.22)	(0.22)	(0.22)
Children under 5	1.22	1.22	1.26*	1.27*
	(0.13)	(0.13)	(0.14)	(0.14)
Children	2,772	2,772	2,772	2,772
Mothers	1,045	1,045	1,045	1,045
Deaths	185	185	185	185

Results for Cox regression models, stratified by mother. * p<.05, ** p<.01, *** p<.001.

Appendix 3.7 Hazard ratios for the risk of child mortality by parental absence, paternal sibling comparison

	Model 1	Model 2	Model 3	Model 4
Maternal absence	2.66*	2.41	2.66*	2.64*
	(1.27)	(1.18)	(1.26)	(1.26)
Paternal absence	1.32		1.33	1.38
	(0.41)		(0.42)	(0.65)
Paternal absence by cause				
Death		0.79		
		(0.52)		
Marriage		1.26		
		(1.14)		
Migration		1.61		
		(0.62)		
Any co-resident kin			0.98	0.99
			(0.24)	(0.26)
Paternal absence X any kin				0.93
				(0.55)
Male child	1.22	1.22	1.22	1.22
	(0.23)	(0.23)	(0.23)	(0.23)
Birth order (first)				
2 to 3	1.27	1.26	1.27	1.26
	(0.45)	(0.44)	(0.45)	(0.45)
4 to 5	1.23	1.22	1.23	1.23
	(0.55)	(0.54)	(0.55)	(0.55)
6+	1.34	1.33	1.33	1.33
	(0.65)	(0.65)	(0.65)	(0.65)
Birth cohort (1999-2002)				
2003-2007	1.20	1.18	1.20	1.20
	(0.43)	(0.42)	(0.43)	(0.43)
2008-2011	1.49	1.41	1.49	1.50
	(0.96)	(0.92)	(0.96)	(0.97)
Mother's age	1.01	1.01	1.01	1.01
	(0.04)	(0.04)	(0.04)	(0.04)
Mother's age squared	1.00	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)	(0.00)
Father's age	0.94	0.95	0.94	0.94
	(0.07)	(0.07)	(0.07)	(0.07)
Father's age squared	1.00	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asset index	0.70	0.74	0.70	0.70
	(0.17)	(0.19)	(0.17)	(0.17)
Children under 5	1.25*	1.27*	1.25*	1.25*
	(0.12)	(0.12)	(0.13)	(0.13)
Children	3,325	3,325	3,325	3,325
Fathers	1,076	1,076	1,076	1,076
Deaths	211	211	211	211

Results for Cox regression models, stratified by mother. * p<.05, ** p<.01, *** p<.001.

Appendix 3.8 Missing Data			
	Two-Parent	Single-Mother	Migrant Father
Child Characteristics			
Male	0	0	0
Birth cohort	0	0	0
Parental Characteristics at Birth			
Birth order	165	85	55
Maternal age	184	57	47
Maternal education	51	31	25
Paternal age	360	-	260
Paternal education	6	-	125
Household Characteristics at Birth			
Asset index	1,274	622	407
Number co-resident children under 5	0	0	0
Any co-resident, non-parental adults	0	0	0
Total Children	24,978	9,188	4,407
Children in Analytic Sample	23,209	8,518	4,000

Chapter 4:

Childrearing Ideals in Tanzania

4.1 **Introduction**

Childrearing in sub-Saharan Africa is shared by the kin group, and families have a wide kin-based safety net on which they can rely in difficult times (Cox and Fafchamps 2007; Eloundou-Enyegue and Shapiro 2005; Goody 2005). A rich anthropological literature describes traditional kinship structures and the roles and responsibilities of different family members in the region (Goody 1982; Page 1989). These studies underscore the rich variation in institutionalized forms of the delegation of parent roles and the ways in which childrearing relationships establish and reinforce reciprocities (Goody 1982; Notermans 2008; Tsai and Dzorgbo 2012). The majority of this literature focuses on practices, however, as opposed to what individuals believe are the ideal childrearing arrangements.

Parents may be absent from their children for a variety of reasons, including death, divorce, non-marital birth, migration and child fostering (Gaydosh 2015). The existing literature focuses primarily on the experience of orphans and fostered children (Beegle et al. 2010; Foster 2000; Hampshire et al. 2014; Ksoll 2007), remaining largely silent on children of divorce, single motherhood, and migration (Clark et al. 2015; Clark and Hamplová 2013; Grant and Yeatman 2014; Madhavan 2010). This chapter investigates preferences for childrearing arrangements in the event of parental absence due to all causes.

Finally, this chapter extends the existing literature on practices of childrearing to consider the strategies that absent parents employ to approximate the ideal arrangement when they are unable to fully achieve the ideal. This differs from existing research, as it examines the practices

of absent parents in light of findings on their views of the ideal childrearing arrangement. Drawing on interviews collected with parents and caregivers in the Rufiji Health and Demographic Surveillance System in Tanzania, this chapter addresses three related research questions. First, what do individuals view as the ideal childrearing arrangement, specifically with regard to living arrangements and the provision of economic support? Second, when they are unable to achieve this ideal, what are preferred alternative childrearing arrangements? And finally, when the ideal arrangement is not attained, what strategies do parents employ to approximate the ideal?

4.2 Background

Throughout much of sub-Saharan Africa, research demonstrates shared childrearing practices across the extended kinship system (Ksoll 2007). Living arrangements are fluid and children are concentrated in extended kin households (Sibanda 2011). Following a collective model of childrearing, many individuals fulfill the roles and responsibilities of childrearing, not only biological parents (Goody 1982, 2005). In this setting, children's living arrangements are complex and often transitory (Notermans 2008). Through a combination of arrangements, ranging from extended school vacation visits of several months to instances of formal fostering extending through the majority of childhood, close kinship ties are maintained and children are adept at adapting to various living arrangements, or "plural parenthood" (Notermans 2004, 2008). In accounts of childrearing across the region, parents and caregivers routinely draw on support from kin and neighbors regardless of the co-residence of the biological parent (Cox and Fafchamps 2007; Eloundou-Enyegue and Shapiro 2005; Foster 2000). The existing literature

documents in detail the practices of childrearing in the region, yet there is little research investigating the ideals of childrearing. This chapter contributes to this gap in the literature.

The majority of the literature on extended kin response to parental absence focuses on redistributive fostering, where children are actively requested by recipient households, or crisis fostering, where children are sent away from their biological parents especially in the event of parental death. Again, this literature focuses mainly on practices, whereas this chapter investigates preferences and ideal response. Regarding living arrangements in the event of parental absence, grandparents are often the default caregivers, despite concern about the availability of material resources and their reluctance to discipline beloved grandchildren (Hampshire et al. 2014; Kasedde et al. 2014; Whyte and Whyte 2004). Beyond living arrangements, there is some evidence from anthropological accounts of the economic responsibilities of foster and biological parents in the event that the child and parents live apart. The provision and sharing of food by parents and caregivers is cited as evidence of love and affection, and the denial of food as evidence of maltreatment (Kasedde et al. 2014; Notermans 2004). In Benin, foster parents are obliged to pay for educating the children and arranging for and financing their marriage, while biological parents are to avoid sending material assistance to the fostered child and foster parent, as it would be a presumptuous display of ownership inconsistent with the fostering agreement (Alber 2003). In contrast, in Uganda biological parents occasionally send money for school expenses to foster parents (Kasedde et al. 2014).

There is some recent research on causes of parental absence aside from fostering and death, particularly single motherhood where children do not live with the biological father. Traditionally, children derive their clan identity from their fathers in patrilineal societies, and the payment of brideprice to the mother's family establishes paternity and formalizes marriage

(Guyer 2004; Plummer et al. 2008; Rwezaura 2000). In the absence of marriage, nonresident fathers may pay damages to the mother's family, acknowledging paternity without agreeing to marriage (Rwezaura 2000). Some studies of unmarried mothers and fathers find that fathers and the paternal clan do claim paternity, and maintain contact with and provide support for the child, at least in the short run (Clark et al. 2015; Hollos and Larsen 2004; Madhavan 2010). However, some fathers refuse paternity, and the responsibility for raising the child falls on the young mother, who oftentimes leaves the child with her family in the event that she is able to secure marriage to another man (Christiansen et al. 2005; Hollos and Larsen 2004; Weisner et al. 1997). In Tanzania, extramarital children belong to the mother's lineage and are not entitled to inherit their father's estate (Rwezaura 2000).

There is limited knowledge on how individuals view different causes of parental absence, and how they think the extended family should respond depending on the cause. Furthermore, there is little attention to divorce and migration as causes of absence. This chapter investigates childrearing preferences when the ideal arrangement cannot be attained. I investigate variation in the preferred response by cause of absence, considering non-marital childrearing, divorce and migration, as well as death and traditional fostering, as causes of parent-child separation.

Finally, while the existing literature does examine practices of childrearing across the extended kin network, there is little research investigating how parents respond when they are unable to achieve their ideal childrearing arrangement. In this chapter I consider the strategies that absent parents use to maintain the ideal. There is a growing literature on absent migrant parents that is relevant here. In sub-Saharan Africa, the majority of this literature focuses on fathers, and finds that migrant fathers maintain contact with their children and some send remittances (Clark et al. 2015; González-Ferrer et al. 2012; Madhavan et al. 2014). Research

from Latin American migrants extends to maternal migration; Hondagneu-Sotelo and Avila (1997) demonstrate the strategies that non-resident mothers employ to maintain closeness and control with their children, including negotiations over the handling of remittances, the exchange of photos, letters and phone calls. Parreñas (2005) similarly finds that mothers use remittances to maintain intimate ties across geographical distances, and that mothers rely greatly on the assistance of extended kin who often feel overburdened by a responsibility seen as not truly theirs. Nevertheless, research on the ways that absent parents strive to maintain the ideal childrearing arrangement and the meanings attached to such practices is limited and deserves further study.

4.3 Data and Methods

This chapter relies on original in-depth interviews with parents and caregivers regarding childrearing and parental absence collected in the Rufiji Health and Demographic Surveillance System (HDSS) in Tanzania. The Rufiji HDSS monitors the vital and residency status of an open cohort of approximately 110,000 members residing in a geographic catchment area of 1,800 square kilometers. More detailed information about the site and HDSS data collection platforms are available elsewhere (Mrema et al. 2015; Sankoh and Byass 2012; Ye et al. 2012).

Respondents were purposively selected from the surveillance population to capture a range of family structures across the types of parental absence. From the perspective of an index child, families were classified as intact (both biological parents co-resident in the household), or absent (at least one biological parent absent from the household). Absent families were further classified by which parent was absent (mother or father or both), the reason for absence (death, migration, marriage), and the child's relationship to the head of the household (remaining parent,

grandparent, aunt/uncle, or sibling). Written informed consent was obtained from all respondents.

Interviews were conducted by a Tanzanian qualitative researcher[32] trained in interview methodology and overseen by myself. I selected 22 index children, that is, children for whom I intended to collect childrearing narratives and living arrangement histories. For one child the household could not be located; the entire household had dissolved, with all members relocating to areas outside of the research site. For the remaining 21 children, the aim was to interview at least two caregivers per child. First, the primary caregiver was interviewed. For intact families this is the biological mother and father. For children in absent parent family structures, this may be the remaining parent, an aunt or uncle, grandparent, sibling, or other kin. Second, for intact families an additional extended family member or kin was interviewed. These individuals were identified after interviewing the parents and asking for the names and contact information of family members, kin, or neighbors who assisted them when facing challenges raising their children. For children in absent parent family structures, the goal was to track and interview all living but non-resident biological parents. Four living non-resident biological parents could not be reached, and one non-resident biological father refused to be interviewed. In total, 58 parents, kin and caregivers of 21 index children were interviewed. Five children resided with both biological parents, seven with the mother only, three with the father only, two with grandparents, three with aunts and/or uncles, and one with siblings (Table 4.1).

Interviews were conducted in Swahili using an interview guide to direct the conversation. The interview guide was organized around four themes of "norms and values of childcare", "conditions of absence", "child placement", and "continuing contact with children". The

[32] The interviewer was male, native to the area where the interviews were conducted, a secondary school graduate, middle-aged, married with children.

interview guide was developed iteratively in discussion with the interviewer over the course of three focus group discussions and five pilot interviews for which I was present. I met daily with the interviewer to debrief, with the interviewer reporting on key discussions and challenges while I took detailed field notes. Interview length ranged from 35 to 100 minutes, with a typical length of one hour. Respondents were given a gift of a bar of soap (valued at $1) in appreciation for their participation. Interviews were tape-recorded and subsequently transcribed in Swahili by the interviewer. The training and data collection were completed over three months in 2013.

Table 4.1 Qualitative Sample Characteristics

Family ID	Family Type	Cause of absence	Number and Relationship of Family Members Interviewed*
1	Two parent	N/A	3 - Mother, father, grandfather
2	Two parent	N/A	2 - Mother, father
3	Two parent	N/A	3 - Mother, father, grandmother
4	Mother only	Death	2 - Mother, neighbor
5	Mother only	Divorce	2 - Mother, step-father
6	Mother only	Divorce	3 - Mother, father, paternal uncle
7	Two parent	N/A	3 - Mother, father, co-mother
8	Mother only	Migration	3 - Mother, father, paternal grandfather
9	Mother only	Non-marital birth	2 - Mother, paternal uncle
10	Two parent	N/A	2 - Mother, father
11	Mother only	Non-marital birth	3 - Mother, step-father, paternal great-grandmother
12	Father only	Death	3 - Father, step-mother, neighbor
13	Father only	Divorce	1 - Mother
14	Grandparent	Death	1 - Paternal grandmother
15	Mother only	Divorce	3 - Mother, paternal grandmother, co-mother
16	Grandparent	Divorce	4 - Mother, paternal grandmother, paternal grandfather, paternal aunt
17	Aunt/Uncle	Divorce	3 - Father, paternal uncle, uncle's wife
18	Father only	Divorce	2 - Father, step-mother
19	Aunt/Uncle	Divorce	6 - Mother, father, step-mother, step-father, two paternal aunts
20	Sibling	Death	3 - Two half-brothers, sister-in-law
21	Aunt/Uncle	Divorce	4 - Mother, paternal aunt, two sisters

* Relationship to index child

Transcripts were then translated into English by a team of three translators, all native Swahili speakers fluent in English and formally employed as Swahili language instructors for English speakers. For five interview transcripts, two translations were completed by separate translators; I compared the two versions of these five transcripts, and meanings did not differ between translators. I reviewed all transcripts with the interviewer and translator, clarifying sections that were unclear. I read each interview several times, and read interviews regarding the same index child in succession. I coded the interviews as themes emerged, and wrote summaries for each index child family. The quotations presented here represent themes present across multiple interviews. Respondents are assigned a pseudonym to preserve anonymity.

This chapter uses the term family structure to describe the living arrangements of children. While family structure is distinct from household structure, as the first does not necessarily imply co-residence, this chapter uses the terms interchangeably to refer to the residential configuration of the family. Household is used to define the residential unit and all those individuals who share the resources of that unit, or, in colloquial terms, "eat from the same pot". A child is said to experience parental absence when he/she does not reside with the parent in the same household for a period of at least four months. Cause of absence may be death, migration, divorce/remarriage, non-marital childbearing or other fostering. Orphan is a term used to refer to a child with a deceased parent, with the appropriate qualifiers of maternal, paternal or double. Kin refer to both biologically related individuals as well as individuals who have married into the family, such as step-mothers and co-wives (in polygynous unions).

4.4 Findings

In this section, I organize the findings around the three research questions. For all three questions I consider two aspects of childrearing: 1) living arrangements and, 2) economic support, to include material and monetary transfers to children. First, I investigate what individuals believe is the ideal childrearing arrangement. Second, when parents are unable to achieve this ideal, what is the preferred childcare arrangement? And finally, I examine the strategies parents employ to approximate the ideal childrearing arrangement when it cannot be attained.

Ideal childrearing arrangement

Living arrangement

Many respondents express the ideal that children should live with both parents, and that parents should avoid being absent, particularly through divorce, migration, and non-marital childbearing. When asked what a child needs most in order to be raised well, Asha, a married woman with four biological children and three foster children explains, "What a child needs most is to be with his parents. They need to stay together. Then parents can listen to his problems and help him. That way, if they stay together, if he needs something, the parent can give it in a timely manner" (Family 1 – mother). Asha explains that children who live with their parents will have their needs met quickly and will be closely looked after. Asha is also raising foster children, and explains that the relationship between foster parents and children is not as good as that between biological parents and children:

> When you take a relative's child, there are some differences with that child and your child. Because everyone has his/her own way of raising children. So when the child first comes to you, there will be some difficulties until he gets used to the new environment. You want it to be the same with him as with your other children, but there are just some

challenges. They are not very serious challenges, just normal difficulties of raising foster children. (Family 1 – mother).

Even respondents who have extensive experience parenting foster and biological children express the two-parent ideal.

Not only do respondents describe living with two parents as the ideal, they also voice concern that children are harmed when they do not live with both parents. Juma and Asia were married for seven years and had three children together before they divorced in 2003. Both Juma and Asia separately expressed regret that they divorced because they see that their children have suffered as a result. One son managed to divide his time between the parents' houses and his aunt's house, as to avoid supervision and skip school. Juma reflects:

> Right from the beginning I knew the reason that these behavior issues were coming up now. His mother and I live apart. So in between here [going between the houses] there is no one to supervise him. To control the children a hundred percent when you are divorced is impossible. (Family 19 - father)

Asia similarly recounts:

> I knew my children would have misery when we separated – the children would definitely suffer. But what could we do when it had to be that way. (Family 19 - mother)

Juma and Asia attribute their children's bad behavior to their divorce and their inability to monitor their children as closely as they could when they were married and living together with the children. Despite predicting the problems that would arise from the divorce, they describe the separation as inevitable and unavoidable.

While respondents stress the primary importance of living with both biological parents as an ideal, this view is not inconsistent with the large literature describing practices of shared

childrearing. It would be a mistake to interpret this two-parent ideal as synonymous with the nuclear family. Instead, it is a two-parent ideal embedded within an extended kin support structure. Indeed, respondents simultaneously emphasize the value of residing with two parents as well as the rights and responsibilities of extended kin. The questions elicited rich descriptions of children's living arrangements and complex family histories. Even the households selected as two-parent families included non-biological children and other family members or had biological children who were not residing in the household. Indeed, all of the five two-parent families interviewed either had children from previous marriages, were caring for additional, non-biological children, or had sent some of their children out to live with other family members.

Zara and her husband Omar have seven biological children together; Mohamed, the index child, resides with both parents and three of his siblings. The remaining three children have been sent to live with their maternal grandmother: one, Tano, lives with her permanently, and the other two have gone to spend their school holiday with her. The grandmother explains that Zara had another child not long after Tano was born. The grandmother appealed to Omar to let her take Tano to give him the appropriate attention and care, since Zara was busy with another newborn. What started as a temporary arrangement has endured, as the grandmother describes:

> I took Tano to my house and he was staying with me for some time. When Zara came, she saw herself that Tano was very happy and she was satisfied with the care I was providing for him. And so she decided to leave him here, and when she has a desire to see her child she calls me and I send him there. He goes and plays with his brothers and sisters for two or three days, and then he returns here. (Family 3 – grandmother)

Despite the expressed ideal of parental care, actual family structures are fluid and complex. Children often move back and forth between households, and are thought to belong to

many households. This shared responsibility for children is sometimes in tension with biological parents' claim to their own children. When one mother requests that her fostered child be returned to her, the uncle who is living with the child explains, "Eeh,[33] I told her, this is our child, all of us" (Family 9 – uncle). The child remained with the uncle. The realities of children's living arrangements reflect the embeddedness of the two-parent ideal within the norms of shared childrearing.

Economic support

When explaining the two-parent ideal living arrangement, respondents also emphasized different types of support for which fathers and mothers should be responsible. Fathers are to provide their children with money, particularly for educational expenses such as school fees and school materials. On the other hand, mothers are responsible for providing food and physical care. This may reflect a history of men's greater labor force participation and access to capital and women's role in cultivating and preparing food. Nevertheless, it is an important distinction in the meanings parents attach to support for their children as well as their understanding of parental responsibility. A polygynous[34] man living with two wives and eleven children explains, "Eeh, my wife, her responsibility isn't money, she would really struggle to find that. She is just taking care of the children and carrying the children, but in struggling for money, that is for the man" (Family 7 - father). This money is often cited as particularly important in making sure the child has access to an education.

While fathers are responsible for monetary expenses, mothers are responsible for providing food. Providing children with food is a way of demonstrating love. Lela, the divorced

[33] "Eeh" is a common way of pausing or indicating agreement in conversation.
[34] While there may be reason to believe that women's autonomy is more restricted in polygynous marriages, the distinction between maternal and paternal support, and the father's responsibility to provide monetary assistance, was drawn by monogamous couples as well.

mother whose children live with their paternal grandparents, explains this as the most important duty of a mother:

> As I said, the way you care for your child as a mother, to make him feel loved, that way is through eating. When a child is given food, he becomes happy, he becomes full, he does not cry often. You see? But if he is hungry, a child has not been fed by his mother, he will become sad. Eeh. Even if you wash him, you dress him in nice clothes, if he has not eaten, he will be sad. When you have given him food, even if you dress him in any type of clothes, whatever else you do it does not matter, he is already happy. He has already eaten and he knows you love him, his soul is happy (Family 16 - mother).

By providing their children with food, mothers care for their children and make them feel loved. In the ideal childrearing arrangement, mothers and fathers are to live together with the child, with mothers providing food and physical care, and fathers providing money and ensuring the child is educated.

Childrearing preferences when parents are absent

Living arrangement

Although two biological parents are viewed as the ideal caregivers, parents are not always able to attain this arrangement. When parents are absent, the preferred living arrangement for children is with the extended family. Respondents express the durability of customs of shared childrearing where children are seen as the responsibility of the kin system. Hamish is Asha's husband and is living with their four biological children, as well as three fostered children, including his nephew. When asked why he took in his sister's orphaned son Iba, Hamish explains, "How can I refuse? How can I send the child away when I am able to care for him?" (Family 1 – father). It is the responsibility of kin to care for children when parents are unable. Hamish continues:

> No parent would bring his child to you if he did not have problems. It is difficult to ask, to send your children to stay with a relative. So he must have a serious problem, that is why he has decided to bring the child to you. So it is your obligation to do that. Now, you cannot refuse (Family 1 – father).

Respondents express a general responsibility of the family (particularly the paternal family) to respond when children are in need, but draw a distinction between orphans and other children experiencing absence. If the support available to children varies by cause of absence, this has important implications for their wellbeing. When probed about parental absence due to death versus divorce, many respondents made a clear distinction in willingness to assist with orphaned children compared to children of divorce. If parents have died, it is viewed as without fault and therefore with more sympathy. Hamish, explained the difference between a widow and a divorcee:

> Hamish: The one who left and abandoned his family it is seen as deliberate. So there will be people there to assist, but not the same as in the case of bereavement. This one [death], it is God's actions that happened to her, it is possible tomorrow this can happen to me. That is why I told you that relatives will be there, spiritually and physically, to look after the bereaved. Different from the one who divorced, others will tell you "why don't you follow him [the husband] to where he is" and another "take him to police station" and the other "take him to court". Each person there will have his own words.
>
> Interviewer: And if someone is divorced or has divorced, what will the support be like?

> Hamish: There the assistance becomes small, because that is of your own making. What you were looking for, you got it. That is why you find so many street children.[35] It is not mostly death, it is mainly divorce, because in that case relatives are unwilling to take care of the children. (Family 1 - father)

The sentiment that there is fault in the event of divorce is consistent with the belief in the two-parent ideal. A divorced woman echoed this reaction to her own situation. She says she cannot ask others for assistance with her four children because people view her misfortune as resulting from her own "negligence"; by asking for help, "you are asking for embarrassment only" (Family 5 - mother). Even though parental absence is common and accepted, it is not ideal, and extended kin response differs depending on the responsibility for the absence assigned to the parent. Respondents elaborated on the role of responsibility following divorce, explaining that the residence of children following a divorce depends on who initiates the divorce. The parent who initiates the divorce is responsible for the children, not kin. Jamal, a divorced man with four children, explains how children should be divided following a divorce:

> Interviewer: What happens if the parents have divorced? Who is supposed to stay with children now?
>
> Jamal: That issue is the one that should be scrutinized first. Examine how they divorced and who is the one with the bad character. You have to determine who started the divorce, who asked for the divorce, because if it is the wife, then this load [children] will be her burden. Because she has asked for the divorce, she is given the children.
>
> Interviewer: And suppose it was the husband?

[35] As the data used here are drawn from a household surveillance site, street children, or children who are homeless, are not captured.

Jamal: Then the burden is his. (Family 6 – father)

There is variation in children's living arrangements due to differentiation by cause of absence and the assignment of blame and responsibility. This assignment of blame was expressed for divorce, migration, and non-marital childbearing as causes of absence.

Consistent with the existing literature on practices, I find that, among extended kin, respondents regularly differentiate among ideal alternative caregivers. Grandparents are viewed as especially suitable caregivers, and step-mothers as particularly dangerous caregivers. Respondents believe children will be well cared for in the event of absence if they are left with their grandparents. Lela describes her marriage to Abdallah, a trader who traveled often to Mozambique for extended periods of time, often years, without sending support. Lela decides she wants a divorce, but Abdallah insists that their son, Mosi, be left with him. In this patrilineal society, the child belongs to the father's lineage, so she has little ability to refuse. She explains:

> His father said, "Just leave my child here". When I left, the child was about two years old. I didn't want to leave him, but they wanted their child, so what could I do. I knew he would be taken care of because his grandmother was there. She said, "I will stay with him, leave him here with his father". If it were only his father, I couldn't have left him there, because a man cannot raise a small child. I depended on his grandmother. Because she was there, I knew he would be raised well. (Family 16 – mother)

She agreed to leave Mosi with his father, but only because she knew the grandmother would be there and would care for him. Later the father died, but Mosi continued to live with the grandparents.

While grandparental care is viewed as ideal, it is not without its drawbacks. Indeed, some parents worry that grandparents will not adequately supervise or discipline their children. One

man explains why he would not send his children to live with their grandmother in the event of his absence:

> I assure you that any grandmother will spoil the child. She will love the child too much, so that even when the child makes a mistake, she will not scold him or show anger. I mean, very few grandmothers raise children the way they raised their own. The majority of grandmothers will mislead children. Maybe they can just go to their grandmother to visit, but not for upbringing (Family 18 – father).

Again, the care of non-parental adults is viewed as inferior to parental care, reemphasizing the two-parent ideal. While parents have strong opinions about who will provide adequate care for their children in their absence, all available non-parental caregivers present challenges and are seen as inferior to biological parents.

Grandparents are considered ideal caregivers in the event of absence, but step-mothers are to be avoided at all cost. Step-mothers are often suspected of mistreating children in the absence of biological mothers. One woman explains, "For a child, a step-mother is not a mother. Some of them will become mothers, and raise their step-children well. But some of them, they just have a bad heart" (Family 19 – aunt). Another woman raising her brother's three children explains why they could not live with her brother's new wife:

> Some step-mothers even abuse their children, they tell them, "You are being rude", and they hold their hands in the fire. That is why, most of the time now when women divorce they take the children with them, and will even go to the police to sue her ex-husband in order to get money to raise her children herself, rather than see them live with a step-mother. (Family 15 - mother)

This excerpt provides evidence of the belief that children residing with new wives in the event of their mother's absence are at risk of maltreatment and would be better-off placed with other family members.

Economic support

In the event of parental absence, respondents explain the differential responsibilities of biological parents and foster parents. Many respondents describe the provision of food and healthcare as the responsibility of guardians, in part because of the immediacy of their need. This is particularly evident in the way that the deprivation of food is commonly evoked in describing the neglectful behavior and unsuitability of step-mothers. Mercy recounts the dramatic story of a "hard-hearted" step-mother. Her brother, divorced and remarried to a new wife, travelled frequently, leaving the children with their step-mother. This step-mother mistreated the children from his first marriage:

> Eeh, she was denying them food. Indeed, they were in a very difficult environment. The children were going to pick from the garbage. Because when my brother would leave, he would leave her with flour. But she would take some flour and lock the rest of it in the house. She would go cook at a neighbor's house, eat there herself, while those children are without food. So they would go in the farms and pick sugarcane to eat. When they saw some porridge thrown away, they would pick it out of the garbage and eat it. That woman had a hard heart. She was refusing the children to eat, and that was not good. (Family 15 - mother).

Step-mothers have "hard hearts", a lack of love that is demonstrated by depriving children of food. Another woman echoed with a description of "typical" stepmother behavior, again linking their unsuitability to the denial of food:

> Can children be raised by a step-mother? If he has remarried, will she be able to raise them? She cannot raise them! She may even refuse to give them food. She may sit there eating, and if the father is there she will tell him the children have already eaten, and they will be afraid to tell the truth. That is why a child has to stay with his mother, you see, even if it is difficult, he will have comfort and food with his real mother. (Family 16 – paternal aunt)

The denial of food is seen as particularly offensive evidence of the lack of love step-mothers have for their step-children. By contrast, "real" mothers demonstrate their love and comfort their children through the provision of food.

While foster parents are responsible for providing for children's immediate needs, biological parents, and again mostly fathers, are responsible for providing durable goods like clothes, and paying for school expenses. Recall Hamish who took in Iba, his deceased sister's son, because Iba's father had not yet remarried and had no sisters to care for the boy. Hamish explains both his and Iba's father's responsibilities in raising the child:

> His father is supposed to provide him with clothes and his school uniform. He should also pay for his school fees. Medical issues and food issues, those are my responsibility. Because he has to have food to eat where he is living. And if he is sick, I cannot just accept it and leave the child with a fever. I have to bring him to the doctor immediately. But school fees, those are the responsibility of his father. So issues of food and health, these I will look after because I am the one living with the child. I cannot tell his father –

> "Bring me money for the doctor" – because I cannot know when he will get sick. (Family 1 - father).

Again, the distinction between the responsibilities of biological and foster parents is linked to the immediacy of the child's needs. Food and medical needs must be tended to quickly, and good foster parents will not wait for parental assistance in those areas.

Strategies to maintain two-parent ideal with absent parents

Living arrangement

In this section I investigate the strategies that parents employ to approximate the two-parent ideal when they must be absent. While this shifts from ideals and preferences to practices of childrearing, I consider these strategies in relation to the two-parent ideal, extending the existing research on childrearing practices. When parents do not reside with their children, they strive to maintain physical contact with their children, and sometimes maintain occasional coresidence. Amina has seven children, five with her first husband Paulo, from whom she is divorced, and two with Yousuf, a boyfriend who travels often to the city for work. After her divorce from Paulo, Amina explains that their five children remained living with Paulo's sister and mother:

> Their aunt, I stayed with her for a long time. I know her well. Eeh, truly, she likes those children, even since I was there. When I delivered my children, she would carry one and I would carry the other and we would go together to the farm to till. Eeh, those are her brother's children, so she sees them as her children. She really loves them so much. (Family 21 - mother)

While she no longer lives permanently with her five children, Amina maintains contact with them. After the divorce she moved to the next town over and continues to see her children regularly. One older daughter, Saada, explains their living arrangement:

> When our parents divorced, we remained here in this house living with our aunt. But we are going to greet our mother nearly every day because she has other young children, our sisters. Every week one person goes. We go and stay with our young sisters and help our mother because she is going to work. So we see mother every week, and we see father every day because he also lives just nearby. (Family 21 - sister)

As is clear from Saada, both mothers and fathers maintain contact with their children following separation.

Lela, mentioned above, explains a similar arrangement. When she and her husband Abdallah divorced, their son Mosi remained living in the father's compound under the care of her paternal grandparents. Yet Lela explains that Mosi often comes to stay with her:

> Mosi is like that. He doesn't have a particular place. He stays with his grandmother, and when he is tired of that place he comes and stays here with me. As you know, a child does not have a proper place where she has to stay, and say, "I will stay and settle here in one place." The child belongs to many places (Family 16 – mother).

As Lela explains, even when parents are absent and do not reside permanently with their children, they maintain contact with their children, and often sustain temporary or occasional residence with their children.

Economic support

Economic responsibilities also endure when parents are absent from their children. One mother who divorced her husband and moved out of their house while the children remained behind explained that she returns to the house every morning to feed her children and send them to school:

> I was worried about my children when I left. Who will cook for them, bathe them and who will get them ready for school in the mornings? But I had to leave because my husband was accusing me of cheating. After I left, the children kept coming to me, asking me to return. My husband and I then agreed that I could still go and care for them. He told me, "Come to raise the children, cook for our children, even if we are divorced". So in the mornings I go and cook for them, make sure they are clean, and send them off to school. (Family 13 - mother)

Another woman, married to her second husband and living with their three children, explains how she sends food to her two children from her first marriage:

> Those children living with their father, they can call me and say, "Mother, we don't have food here". If I have food I tell them to come and take it. If I don't have it, I tell them to be patient, I will look for food and tell them when to come and collect it. For example, in January my son who is at a boarding school called and said, "Mother, I don't have food". I got some maize, ground it for him, and told him to come and take it. He came and took the cornmeal back with him. (Family 2 - mother)

Finally, recall Amina, the divorced woman with five children who live with their paternal aunt. When asked about her husband Paulo's responsibilities to those children even though he lives apart from them, she explains:

> He must still provide for them. For example, their uniforms, tuition. Even in primary school they need uniforms. And soon for their school festival they will need new uniforms. Their father usually buys these things for them. (Family 21 - mother).

The provision of food and fees are meaningful displays of affection and are ways that absent parents maintain their relationships with children.

While in many cases both absent mothers and fathers continue to be involved in childrearing, one notable exception is the fathers of children born to unmarried women. Often young mothers who bear children outside of wedlock receive no assistance from the father of their children. In some cases the father denies his paternity outright and refuses to acknowledge the child. One young mother, Miriam, explains:

> At first he was helping me. Then, when I was seven months pregnant, he visited my parents' house and told them that the child is not his, he is refusing the pregnancy. He said, "I just came to drop your child and that load she has, she has to look for the person who is responsible for that."… After I delivered he came to visit. I looked at him and suddenly he asked me who the baby resembled. I told him, "I don't understand you, you came here only for that?" He has not given me any help. From the day of delivery he never came back and he has provided me with nothing. Since I was pregnant, there is nothing from his relatives either. They told him, "If you accept that pregnancy it will be on your own." You know he already had a child with another woman. Mmmh. Therefore his parents helped that woman who was pregnant. And then here comes another one, and they think he will just get used to it. He is playing again, so that's why they decided to tell him that. (Family 11 – mother).

A man who bore two children out of wedlock echoes this sentiment, contrasting his lack of responsibility for those children with his enduring obligations to his children conceived within marriage: "But children born inside marriage, you are bound by contracts to those children". (Family 19 - father). Absent fathers are not obliged to provide any support to children born

outside of wedlock, and the complete responsibility for childrearing lies with the single mother.

4.5 Conclusion

Children's living arrangements are fluid and complex, in constant flux and renegotiation, and not exclusively for children living apart from their parents. This is consistent with the findings on child fostering and extended kin childrearing responsibilities (Alber 2004; Fiawoo 1978; Goody 1982; Madhavan 2004; Sear and Coall 2011). Perhaps surprising then, given the shared childrearing expectations and the normalization of parental absence, is the sentiment that children are best cared for by their biological parents, who should avoid being absent from their children. Despite the norms of shared childrearing, the ideal childcare arrangement is two biological parents residing with and providing for the child, even in the presence of extended kin support. It is unclear if this is a recent transformation in ideals, reflective of a move towards more Western ideals of childrearing (Caldwell and Caldwell 1987; Cherlin 2012; Goode 1963; Goody 1982). Nevertheless, it is unlikely that this indicates a move towards the nuclear family structure, as this two-parent ideal is comfortably maintained within the extended family system.

When the two-parent ideal is not attained, kin express differential willingness to respond to parental absence depending on the reason for absence. There is a moral hierarchy in causes of absence, with the children of deceased parents viewed as most deserving of assistance. This is perhaps unexpected given speculation as to the stigmatization of orphans, particularly AIDS orphans (Cluver et al. 2008; Cluver and Orkin 2009). It is also possible that these relatives are aware of the greater public assistance available to orphans, to which they may gain access when taking in an orphaned child (Bachan 2014; Weinreb et al. 2008). Furthermore, this view on the innocence of orphaned children could be an extension of the narratives of blame that often

surround AIDS deaths, wherein bereaved relatives make sense of death by negotiating responsibility for an individual's diseases and death, and children are cited as innocent victims (Ashforth and Watkins 2015). The assignment of blame to the parents who are absent due to divorce, migration, and non-marital childbearing has important implications for the wellbeing of their children.

Finally, when parents are unable to achieve the two-parent ideal and must be absent, they employ a variety of strategies to maintain contact with and support their children. This is consistent with accounts of fostering in the region (Cox and Fafchamps 2007; Eloundou-Enyegue and Shapiro 2005; Foster 2000). The attempt by absent parents to continue to be a strong presence in the lives of their children underscores their faith in the two-parent ideal, and represents their knowledge that their absence may be harmful for their children. There remains an intriguing puzzle as to why, in a context of normalized parental absence and extended kin support, children with absent parents fare worse than children with co-resident parents across a variety of domains. It is unclear how parents who avoid absence may differ from those who are unable to live consistently with their children. This deserves further research to investigate the mechanisms underlying differences in outcomes between children with present and absent parents.

Chapter 5:

Conclusion

5.1 Introduction

This project contributes to a growing body of work that moves beyond orphanhood, and more broadly beyond the AIDS epidemic, to examine other important dimensions of family life (Chae 2013; Clark and Hamplová 2013; Goldberg 2013; Madhavan et al. 2012). Indeed, under what Dionne et al. (2013) describe as "AIDS exceptionalism", social science in the region has been, for several decades, preoccupied with HIV, resulting in a neglect of other areas of social life (see also Frye and Trinitapoli 2015). This project begins to uncover the other important issues facing children in the region, including single-motherhood, divorce, migration and child relocation.

Children in Tanzania live in a variety of family structures, in the presence and absence of parents and other extended kin. The living arrangements of children are influenced by a confluence of demographic and social factors, including marriage and fertility patterns, migration, urbanization and modernization. Yet the majority of existing scholarship and policy programming on children in sub-Saharan Africa focuses on orphanhood due to parental death, often as a result of AIDS related mortality. As a result, we know very little about other reasons for absence. In addition to death, the dissertation examines absence due to union formation and dissolution, migration, and child fostering. The dissertation presents the first age- and cause-specific estimates of children's experience of absence, quantifying the relative contribution of these various forces. Despite the emphasis placed on orphanhood, parental death ranks as the least common cause of absence.

By examining multiple causes of absence simultaneously, the project provides a unique window into the processes leading to absence and a better understanding of the distinctiveness and similarity of these processes. The domestic and international research on parental absence tends to focus on the negative consequences of particular family structures resulting from specific causes of parental absence. This research considers the potential positive along with negative effects of parental absence for child mortality, and finds that one type of absence – paternal absence at birth due to migration – is indeed associated with better child survival. Nevertheless, all types of maternal absence are associated with worse child survival, and paternal absence due to migration following the child's birth is associated with worse child survival. Extended kin may be able to buffer the negative association of maternal absence, although the importance of different kin ties remains unclear. Future research is needed to better understand the mechanisms underlying the varied associations between different types of parental absence and child wellbeing in this context.

This project also contributes to the literature on the family in the United States. American studies of the family often rest on assumptions about the self-sufficiency of the nuclear family that are tenuous (Bengtson 2001; Hansen 2004). Indeed, recent American scholarship has encouraged a reevaluation of the role of extended kin in childrearing, and not only for economically marginalized families (Edin and Lein 1997; Gerstel 2011; Meyer 2014). This research encourages a broadening of focus on the family from the nuclear unit to extended kinship systems. Childrearing is often a collective endeavor, and an examination of African kinship may illuminate latent assumptions inherent in research in other settings.

5.2 Future Research

There are several findings in the dissertation that point to promising directions for future research. In Chapter 3, I find that children born to married mothers with non-resident migrant fathers have better survival, while children born to unmarried mothers with non-resident fathers have worse survival, in comparison to children born to two-parent families. However, children born to two-parent families who subsequently experience paternal migration have higher mortality than children born to two-parent families with a constantly present father. This suggests that there are important variations in paternal migration that deserve further exploration.

Furthermore, the general finding from Chapter 3 that maternal absence by any cause is associated with higher child mortality warrants further investigation into the mechanisms underlying these associations. It would be useful to examine the causes of death for these children to better understand whether neglect may be playing a role. The protective effect of lateral kin would be interesting to examine further, particularly the identity of these kin and their relatedness to the children given the negative impressions of step-mothers as caregivers. The data to disentangle causes of death and types of kin by lineage or relatedness are unfortunately not available in the data used here, but would be useful to collect in future projects.

The experience of children in single-mother families deserves greater attention. The finding that 70% of children of single-mothers, who already have an absent father, will experience maternal absence as well by age 10 is notable. We know from a large literature in the United States that such children face significant disadvantage, and the findings in Chapter 3 demonstrate that these children face an elevated mortality risk in Tanzania as well.

Finally, the qualitative data in Chapter 4 demonstrate that even in a context of shared childrearing, individuals view the two-parent model as ideal. However, in reality children's

living arrangements are fluid and complex, and children live with a variety of individuals, adhering to the two-parent ideal at times. This suggests that we reconsider how to measure household membership in a way that captures children's everyday experiences of care. If children regularly move between several households, restricting residence to one household per person limits our view of the family networks that are involved in raising children.

5.3 Implications

These findings have important implications for policymakers. First, the majority of programs in place to support children target what are termed "orphans and vulnerable children", which in practice typically reach children affected by AIDS. As Africanist researchers Christiansen et al. (2005:23) observe, "From a local point of view, the policy focus on orphans may seem peculiar as a first criterion for entitlement to assistance…Many other children are in the same situation of de facto having only one parent—because of illness, neglect, or unstable parental relations (estrangement, divorce and children born outside wedlock)…These children do not qualify for entitlement since no parent has died, yet their situations may be just as difficult". The findings of this project underscore that parental death comprises a small share of children's overall experience of absence. As such, policymakers may consider broadening their target population. This strategy is in line with a more general trend in the aid community that shows a shift away from HIV/AIDS specific funding in the region.

The demographic analysis in Chapter 2 reveals that most absence occurs early, with half by age 5. This finding is particularly noteworthy, as other studies have demonstrated the importance of early childhood in shaping children's health and development, and may help policymakers target interventions to early childhood. This is particularly relevant in this context,

as many interventions targeting children operate through schools, in which children often do not enroll until age 7. Also, as young children are likely to not reside with their parents at a young age, targeting of programs for young children should not be limited to biological parents.

Finally, as families in Tanzania respond to a constellation of contemporary demographic, social and cultural changes, it is important to understand the implications of such changes for children's living arrangements. This project provides policymakers with a better understanding of children's exposure to potentially challenging family structures, enabling us to better design programs to support them, fostering not only their individual development but the development of the country more generally. The results are relevant not only for this particular geographic locale, but for scholars and policymakers in other countries interested in improving children's welfare in the face of social and demographic changes that challenge traditional family forms.

References

Adato, M., Kadiyala, S., Roopnaraine, T., Biermayr-Jenzano, P., and Norman, A. (2005). Children in the shadow of AIDS: Studies of vulnerable children and orphans in three provinces in South Africa. *Washington, DC: IFPRI*.

Adserà, A., and Tienda, M. (2012). Comparative perspectives on international migration and child well-being. *ANNALS of the American Academy of Political and Social Science*, *643*(1), 6–15.

Ainsworth, M., and Semali, I. (2000). *The impact of adult deaths on children's health in northwestern Tanzania* (Policy Research Working Chapter No. 2266). Washington, DC: World Bank Publications.

Akresh, R. (2009). Flexibility of household structure child fostering decisions in Burkina Faso. *Journal of Human Resources*, *44*(4), 976–997.

Alber, E. (2003). Denying biological parenthood: fosterage in Northern Benin. *Ethnos*, *68*(4), 487–506.

Alber, E. (2004). Grandparents as Foster-Parents: Transformations in Foster Relations between Grandparents and Grandchildren in Northern Benin. *Africa: Journal of the International African Institute*, *74*(1), 28–46.

Allendorf, K. (2013). Going nuclear? Family structure and young women's health in India, 1992–2006. *Demography*, *50*(3), 853–880.

Ardington, C., and Leibbrandt, M. (2010). Orphanhood and Schooling in South Africa: Trends in the vulnerability of orphans between 1993 and 2005. *Economic development and cultural change*, *58*, 507–536.

Ashforth, A., and Watkins, S. (2015). Narratives of Death in Rural Malawi in the Time of AIDS. *Africa*, *85*(02), 245–268.

Bachan, L. (2014). Anticipatory child fostering and household economic security in Malawi. *Demographic Research*, *30*(chapter 40), 1157–1188.

Baizán, P., Beauchemin, C., and González-Ferrer, A. (2014). An Origin and Destination Perspective on Family Reunification: The Case of Senegalese Couples. *European Journal of Population*, *30*(1), 65–87.

Beegle, K., De Weerdt, J., and Dercon, S. (2006). Orphanhood and the long-run impact on children. *American Journal of Agricultural Economics*, *88*(5), 1266.

Beegle, K., De Weerdt, J., and Dercon, S. (2010). Orphanhood and human capital destruction: Is there persistence into adulthood? *Demography*, *47*(1), 163–180.

Beegle, K., Filmer, D., Stokes, A., and Tiererova, L. (2010). Orphanhood and the living arrangements of children in sub-Saharan Africa. *World Development*, *38*(12), 1727–1746.

Beise, J., and Voland, E. (2002). A multilevel event history analysis of the effects of grandmothers on child mortality in a historical German population (Krummhörn, Ostfriesland, 1720-1874). *Demographic Research*, *7*(chapter 13), 469–497.

Bengtson, V. L. (2001). Beyond the Nuclear Family: The Increasing Importance of Multigenerational Bonds. *Journal of Marriage and Family*, *63*(1), 1–16.

Bicego, G., Rutstein, S., and Johnson, K. (2003). Dimensions of the emerging orphan crisis in sub-Saharan Africa. *Social Science and Medicine*, *56*(6), 1235–1247.

Birdthistle, I. J., Floyd, S., Machingura, A., Mudziwapasi, N., Gregson, S., and Glynn, J. R. (2008). From affected to infected? Orphanhood and HIV risk among female adolescents in urban Zimbabwe. *AIDS (London, England)*, *22*(6), 759–766.

Bledsoe, C. H., and Isiugo-Abanihe, U. C. (1989). Strategies of child fosterage among Mende grannies in Sierra Leone. In R. Lesthaeghe (Ed.), *African reproduction and Social Organization in sub-Saharan Africa* (pp. 442–474). Berkeley: University of California Press.

Bongaarts, J. (2001). Household size and composition in the developing world in the 1990s. *Population studies*, *55*(3), 263–279.

Brooks-Gunn, J., and Duncan, G. J. (1997). The effects of poverty on children. *The future of children*, 55–71.

Caldwell, J. C. (1993). Health transition: the cultural, social and behavioural determinants of health in the Third World. *Social Science and Medicine*, *36*(2), 125–135.

Caldwell, J. C., and Caldwell, P. (1987). The cultural context of high fertility in sub-Saharan Africa. *Population and development review*, 409–437.

Case, A., and Ardington, C. (2006). The impact of parental death on school outcomes: Longitudinal evidence from South Africa. *Demography*, *43*(3), 401–420.

Case, A., Lin, I.-F., and McLanahan, S. (1999). Household resource allocation in stepfamilies: Darwin reflects on the plight of Cinderella. *American Economic Review*, 234–238.

Case, A., Lin, I.-F., and McLanahan, S. (2000). How hungry is the selfish gene? *The Economic Journal*, *110*(466), 781–804.

Case, A., Lin, I.-F., and McLanahan, S. (2001). Educational attainment of siblings in stepfamilies. *Evolution and human behavior*, *22*(4), 269–289.

Case, A., Paxson, C., and Ableidinger, J. (2004). Orphans in Africa: parental death, poverty, and school enrollment. *Demography*, *41*(3), 483–508.

Castle, S. E. (1995). Child fostering and children's nutritional outcomes in rural Mali: The role of female status in directing child transfers. *Social Science and Medicine*, *40*(5), 679–693.

Caulfield, L. E., Huffman, S. L., and Piwoz, E. G. (1999). Interventions to improve intake of complementary foods by infants 6 to 12 months of age in developing countries: impact on growth and on the prevalence of malnutrition and potential contribution to child survival. *Food and Nutrition Bulletin*, *20*(2), 183–200.

Cellule de Planification et de Statistique (CPS/SSDSPF), Institut National de la Statistique (INSTAT/MPATP), & INFO-STAT et ICF International. (2014). *Enquête Démographique et de Santé au Mali 2012–2013* [Demographic investigation and health in Mali, 2012–2013]. Rockville, MD: CPS, INSTAT, INFO-STAT et ICF International.

Central Statistical Office (CSO), & Macro International Inc. (2008). *Swaziland Demographic and Health Survey 2006–07*. Mbabane, Swaziland: Central Statistical Office and Macro International Inc.

Chae, S. (2013, March). *Divorce, remarriage, and children's outcomes in rural Malawi*. Chapter presented at the Demographic and Institutional Change in Global Families Conference of the International Sociological Association, Taipei, Taiwan.

Cherlin, A. J. (1978). Remarriage as an incomplete institution. *American journal of Sociology*, 634–650.

Cherlin, A. J. (1999). Going to extremes: Family structure, children's well-being, and social science. *Demography*, *36*(4), 421–428.

Cherlin, A. J. (2012). Goode's World Revolution and Family Patterns: A Reconsideration at Fifty Years. *Population and Development Review*, *38*(4), 577–607.

Christiansen, C., Yamba, B. C., and Whyte, S. R. (2005). Arenas of Child Support. Interfaces of Family, State and NGO Provisions of Social Security. Chapter presented at Conference on New Frontiers of Social Policy, Arusha, Tanzania.

Chuong, C., and Operario, D. (2012). Challenging household dynamics: Impact of orphanhood, parental absence, and children's living arrangements on education in South Africa. *Global public health*, *7*(1), 42–57.

Clark, S., Cotton, C., and Marteleto, L. J. (2015). Family Ties and Young Fathers' Engagement in Cape Town, South Africa. *Journal of Marriage and Family*, *77*(2), 575–589.

Clark, S., and Hamplová, D. (2013). Single motherhood and child mortality in sub-Saharan Africa: A life course perspective. *Demography*, *50*(5), 1521–1549.

Clark, S., Khan, K., Houle, B., Arteche, A., Collinson, M., Tollman, S. M., and Stein, A. (2013). Young Children's Probability of Dying Before and After Their Mother's Death: A Rural South African Population Based Surveillance Study. *PLoS Medicine*, *10*(3), 409–419.

Cluver, L. D., Gardner, F., and Operario, D. (2008). Effects of stigma on the mental health of adolescents orphaned by AIDS. *Journal of Adolescent Health*, *42*(4), 410–417.

Cluver, L., and Orkin, M. (2009). Cumulative risk and AIDS-orphanhood: Interactions of stigma, bullying and poverty on child mental health in South Africa. *Social Science and Medicine*, *69*(8), 1186–1193.

Collier, P., Radwan, S., & Wangwe, S. (1986). *Labour and poverty in rural Tanzania: Ujamaa and rural development in the United Republic of Tanzania.* Oxford, UK: Clarendon Press.

Collinson, M. (2008). *Children and Migration in South Africa: A case study from a rural, northeastern district* (Scientific Report). Princeton University, Rockefeller Foundation.

Collinson, M., Tollman, S. M., Kahn, K., Clark, S., & Garenne, M. (2006). Highly prevalent circular migration: Households, mobility and economic status in rural South Africa. In M. Tienda, S. E. Findley, S. Tollman, & E. Preston-Whyte (Eds.), *Africa on the move: African migration and urbanisation in comparative perspective* (pp. 194–216). Johannesburg, South Africa: Wits University Press.

Comaroff, J. P., and Roberts, S. (1977). Marriage and extra-marital sexuality. *Journal of African Law*, *21*(1), 97–123.

Côté, S. M., Boivin, M., Liu, X., Nagin, D. S., Zoccolillo, M., and Tremblay, R. E. (2009). Depression and anxiety symptoms: onset, developmental course and risk factors during early childhood. *Journal of Child Psychology and Psychiatry*, *50*(10), 1201–1208.

Cox, D. (2007). Biological Basics and the Economics of the Family. *The Journal of Economic Perspectives*, 91–108.

Cox, D., and Fafchamps, M. (2007). Extended family and kinship networks: economic insights and evolutionary directions. *Handbook of development economics*, *4*, 3711–3784.

Crampin, A. C., Floyd, S., Glynn, J. R., Madise, N., Nyondo, A., Khondowe, M. M., Njoka, C.L., Kanyongoloka, H., Ngwira, B., Zaba, B., and Fine, P. (2003). The long-term impact of HIV and orphanhood on the mortality and physical well-being of children in rural Malawi. *Aids*, *17*(3), 389–397.

Deaton, A. (2002). Policy implications of the gradient of health and wealth. *Health Affairs*, *21*(2), 13–30.

Deininger, K., Garcia, M., and Subbarao, K. (2003). AIDS-induced orphanhood as a systemic shock: Magnitude, impact, and program interventions in Africa. *World Development*, *31*(7), 1201–1220.

DeRose, L. F., Garcia, P. C., Salazar, A., and Tarud, C. (2014, May). Household Structure and School Attendance in 67 Countries: Why Children with Absent Fathers Do Better in Some Places. Chapter presented at the Annual Meeting of the Population Association of America, Boston, MA.

de Walque, D., and Kline, R. (2012). The Association Between Remarriage and HIV Infection in 13 Sub-Saharan African Countries. *Studies in Family Planning*, *43*(1), 1–10.

Dionne, K. Y., Gerland, P., and Watkins, S. (2013). AIDS exceptionalism: another constituency heard from. *AIDS and Behavior*, *17*(3), 825–831.

Dodson, B. (2000). Porous Borders: Gender and Migration in Southern Africa. *South African Geographical Journal*, *82*(1), 40–46.

Donato, K. M., and Duncan, E. M. (2011). Migration, social networks, and child health in Mexican families. *Journal of Marriage and Family*, *73*(4), 713–728.

Draper, P., and Harpending, H. (1982). Father absence and reproductive strategy: An evolutionary perspective. *Journal of anthropological research*, 255–273.

Duncan, G. J., Brooks-Gunn, J., and Klebanov, P. K. (1994). Economic Deprivation and Early Childhood Development. *Child Development*, *65*(2), 296–318.

Edin, K., and Lein, L. (1997). *Making ends meet: How single mothers survive welfare and low-wage work*. Russell Sage Foundation Publications.

Eloundou-Enyegue, P. M., & Shapiro, D. (2005). *Buffering inequalities: The safety net of extended families in Cameroon*. Ithaca, NY: Cornell University.

Eloundou-Enyegue, P. M., and Stokes, C. S. (2002). Will Economic Crises in Africa Weaken Rural-Urban Ties? Insights From Child Fosterage Trends in Cameroon. *Rural sociology*, *67*(2), 278–298.

Evans, D. K., and Miguel, E. (2007). Orphans and schooling in Africa: A longitudinal analysis. *Demography*, *44*(1), 35–57.

Fay Greene, M. (2002, December 22). What Will Become of Africa's AIDS Orphans? *The New York Times*. New York.

Fiawoo, D. K. (1978). Some patterns of foster care in Ghana. In C. Oppong, G. Adaba, M. Bekombo-Priso, & J. Mogey (Eds.), *Marriage, fertility and parenthood in West Africa* (pp. 273–288). Canberra, Australia: Australian National University.

Ford, K., and Hosegood, V. (2005). AIDS mortality and the mobility of children in KwaZulu Natal, South Africa. *Demography*, *42*(4), 757–768.

Fortson, J. G. (2008). The gradient in sub-Saharan Africa: socioeconomic status and HIV/AIDS. *Demography*, *45*(2), 303–322.

Foster, G. (2000). The capacity of the extended family safety net for orphans in Africa. *Psychology, Health and Medicine*, *5*(1), 55–62.

Frank, R. (2005). International migration and infant health in Mexico. *Journal of immigrant health*, *7*(1), 11–22.

Frye, M., and Trinitapoli, J. (2015). Ideals as Anchors for Relationship Experiences. *American Sociological Review*, *80*(3), 496-525.

Gage, A. J., Sommerfelt, A. E., and Piani, A. L. (1997). Household structure and childhood immunization in Niger and Nigeria. *Demography*, *34*(2), 295–309.

Gage-Brandon, A. J., and Meekers, D. (1993). Sex, contraception and childbearing before marriage in sub-Saharan Africa. *International Family Planning Perspectives*, 14–33.

Gaydosh, L. (2015). Childhood Risk of Parental Absence in Rural Tanzania. *Demography, 52*(4).

Gerstel, N. (2011). Rethinking Families and Community: The Color, Class, and Centrality of Extended Kin Ties1. *Sociological Forum 26*, 1–20.

Gettleman, J. (2014, December 13). An Ebola Orphan's Plea in Africa: "Do You Want Me?." *The New York Times*. New York.

Gibson-Davis, C. M. (2008). Family structure effects on maternal and paternal parenting in low-income families. *Journal of Marriage and Family*, *70*(2), 452–465.

Gibson, M. A., and Mace, R. (2005). Helpful grandmothers in rural Ethiopia: A study of the effect of kin on child survival and growth. *Evolution and Human Behavior*, *26*(6), 469–482.

Goldberg, R. E. (2013). Family Instability and Early Initiation of Sexual Activity in Western Kenya. *Demography*, *50*(2), 725–750.

González-Ferrer, A., Baizán, P., and Beauchemin, C. (2012). Child-Parent Separations among Senegalese Migrants to Europe Migration Strategies or Cultural Arrangements? *The Annals of the American Academy of Political and Social Science*, *643*(1), 106–133.

Goode, W. J. (1963). *World revolution and family patterns.* Oxford, England: Free Press Glencoe

Goody, E. N. (1982). *Parenthood and social reproduction: Fostering and occupational roles in West Africa*. Cambridge, UK: Cambridge University Press.

Goody, E. N. (2005). *Contexts of kinship: An essay in the family sociology of the Gonja of northern Ghana* (Vol. 7). Cambridge, UK: Cambridge University Press.

Graham, E., and Jordan, L. P. (2011). Migrant Parents and the Psychological Well-Being of Left-Behind Children in Southeast Asia. *Journal of Marriage and Family*, *73*(4), 763–787.

Grant, M. J., and Soler-Hampejsek, E. (2014). HIV Risk Perceptions, the Transition to Marriage, and Divorce in Southern Malawi. *Studies in family planning*, *45*(3), 315–337.

Grant, M. J., and Yeatman, S. (2012). The relationship between orphanhood and child fostering in sub-Saharan Africa, 1990s–2000s. *Population studies*, *66*(3), 279–295.

Grant, M. J., and Yeatman, S. (2014). The impact of family transitions on child fostering in rural Malawi. *Demography*, *51*(1)*,* 205–228.

Grassly, N. C., and Timaeus, I. M. (2005). Methods to estimate the number of orphans as a result of AIDS and other causes in Sub-Saharan Africa. *Journal of Acquired Immune Deficiency Syndromes (1999)*, *39*(3), 365–375.

Gregson, S., Zaba, B., and Garnett, G. P. (1999). Low fertility in women with HIV and the impact of the epidemic on orphanhood and early childhood mortality in sub-Saharan Africa. *Aids*, *13*(A), S249–S257.

Griffiths, A. M. (1997). *In the shadow of marriage: Gender and justice in an African community*. Chicago, IL: University of Chicago Press.

Gulati, P. V. (1967). Mortality rate and causes of deaths among children below five years. *The Indian Journal of Pediatrics*, *34*(8), 273–279.

Gumbo, P. (2008). *The relationship between parent temporary migration and childhood survival in households left behind in the South African rural sub-district of Agincourt.* Unpublished dissertation.

Gummerson, E., and Schneider, D. (2013). Eat, drink, man, woman: gender, income share and household expenditure in South Africa. *Social forces*, *91*(3), 813–836.

Guyer, J. I. (2004). *Marginal gains: monetary transactions in Atlantic Africa* (Vol. 1997). Chicago, IL: University of Chicago Press.

Hadley, C. (2004). The costs and benefits of kin. *Human Nature*, *15*(4), 377–395.

Hamilton, W. D. (1964). The genetical evolution of social behaviour. II* 1. *Journal of theoretical biology*, *7*(1), 17–52.

Hampshire, K., Porter, G., Agblorti, S., Robson, E., Munthali, A., and Abane, A. (2014). Context matters: Fostering, orphanhood and schooling in sub-Saharan Africa. *Journal of Biosocial Science, 47,* 141–164.

Hansen, K. V. (2004). *Not-so-nuclear families: Class, gender, and networks of care*. New Brunswick, NJ: Rutgers University Press.

Harwood-Lejeune, A. (2001). Rising Age at Marriage and Fertility in Southern and Eastern Africa. *European Journal of Population 17*(3), 261–280.

Hays, S. (1998). *The cultural contradictions of motherhood*. Hartford, CT: Yale University Press.

Heath, K. M. (2003). The effects of kin propinquity on infant mortality. *Biodemography and Social Biology*, *50*(3-4), 270–280.

Hildebrandt, N., McKenzie, D. J., Esquivel, G., and Schargrodsky, E. (2005). The Effects of Migration on Child Health in Mexico [with Comments]. *Economia*, *6*(1), 257–289.

Hill, C., Hosegood, V., and Newell, M.-L. (2008). Children's care and living arrangements in a high HIV prevalence area in rural South Africa. *Vulnerable Children and Youth Studies*, *3*(1), 65–77.

Hofferth, S. L., and Anderson, K. G. (2003). Are All Dads Equal? Biology Versus Marriage as a Basis for Paternal Investment. *Journal of Marriage and Family*, *65*(1), 213–232.

Hollos, M., and Larsen, U. (2004). Which African men promote smaller families and why? Marital relations and fertility in a Pare community in northern Tanzania. *Social Science and Medicine*, *58*(9), 1733–1749.

Hondagneu-Sotelo, P., and Avila, E. (1997). I'm here, but I'm there. *Gender and Society*, *11*(5), 548.

Hosegood, V., Floyd, S., Marston, M., Hill, C., McGrath, N., Isingo, R., Crampin, A., and Zaba, B. (2007). The effects of high HIV prevalence on orphanhood and living arrangements of children in Malawi, Tanzania, and South Africa. *Population studies*, *61*(3), 327–336.

Hosegood, V., and Madhavan, S. (2010). Data availability on men's involvement in families in sub-Saharan Africa to inform family-centered programmes for children affected by HIV and AIDS. *Journal of the International AIDS Society*, *13 (Supplement 2)*(S5), 1–7.

Hosegood, V., McGrath, N., Herbst, K., and Timaeus, I. M. (2004). The impact of adult mortality on household dissolution and migration in rural South Africa. *Aids*, *18*(11), 1585.

Hrdy, S. B. (2007). Evolutionary context of human development: The cooperative breeding model. *Family relationships: An evolutionary perspective*, 39–68.

Huber, B. R., and Breedlove, W. L. (2007). Evolutionary theory, kinship, and childbirth in cross-cultural perspective. *Cross-Cultural Research*, *41*(2), 196–219.

Hunter, S. S. (1990). Orphans as a window on the AIDS epidemic in Sub-Saharan Africa: initial results and implications of a study in Uganda. *Social Science and Medicine*, *31*(6), 681–690.

Isiugo-Abanihe, U. C. (1985). Child fosterage in West Africa. *Population and Development Review*, 53–73.

Jingzhong, Y., and Lu, P. (2011). Differentiated childhoods: impacts of rural labor migration on left-behind children in China. *The Journal of peasant studies*, *38*(2), 355–377.

Justesen, A., and Kunst, A. (2000). Postneonatal and child mortality among twins in Southern and Eastern Africa. *International Journal of Epidemiology*, *29*(4), 678–683.

Kanaiaupuni, S. M., and Donato, K. M. (1999). Migradollars and mortality: The effects of migration on infant survival in Mexico. *Demography*, *36*(3), 339–353.

Kasedde, S., Doyle, A. M., Seeley, J. A., and Ross, D. A. (2014). They are not always a burden: Older people and child fostering in Uganda during the HIV epidemic. *Social Science and Medicine*, *113*, 161–168.

Kenney, C. T. (2008). Father Doesn't Know Best? Parents' Control of Money and Children's Food Insecurity. *Journal of Marriage and Family*, *70*(3), 654–669.

Kidman, R., Hanley, J. A., Foster, G., Subramanian, S. V., and Heymann, S. J. (2012). Educational Disparities in AIDS-Affected Communities: Does orphanhood confer unique vulnerability? *Journal of Development Studies*, *48*(4), 531–548.

Ksoll, C. (2007). Family Networks and orphan caretaking in Tanzania. *Working chapter Yale University*.

Leinaweaver, J. (2014). Informal Kinship-Based Fostering Around the World: Anthropological Findings. *Child Development Perspectives*, *8*(3), 131–136.

Lesthaeghe, R., and Jolly, C. (1995). The start of the sub-Saharan fertility transition: Some answers and many questions. *Journal of International Development*, *7*(1), 25–45.

LeVine, S., and LeVine, R. (1981). Child abuse and neglect in sub-Saharan Africa. In J. Corbin (Ed.), *Child abuse and neglect: Cross-cultural perspectives* (pp. 35–55). Berkeley, California: University of California Press.

Levitt, P. (1998). Social remittances: migration driven local-level forms of cultural diffusion. *International Migration Review*, *32*(4), 926–948.

Lindblade, K. A., Odhiambo, F., Rosen, D. H., and DeCock, K. M. (2003). Health and nutritional status of orphans< 6 years old cared for by relatives in western Kenya. *Tropical Medicine and International Health*, *8*(1), 67–72.

Lindstrom, D. P., and Muñoz-Franco, E. (2005). Migration and the diffusion of modern contraceptive knowledge and use in rural Guatemala. *Studies in Family Planning*, *36*(4), 277–288.

Lindstrom, D. P., and Muñoz-Franco, E. (2006). Migration and maternal health services utilization in rural Guatemala. *Social Science and Medicine*, *63*(3), 706–721.

Lloyd, C. B., and Blanc, A. K. (1996). Children's schooling in sub-Saharan Africa: The role of fathers, mothers, and others. *Population and development review*, 265–298.

Lloyd, C. B., and Desai, S. (1992). Children's Living Arrangements in Developing Countries. *Population Research and Policy Review*, *11*(3), 193–216.

Lockwood, M. (1998). *Fertility and Household Labour in Tanzania: Demography, Economy and Society in Rufiji District, c. 1870-1986*. Oxford, UK: Clarendon Press.

Luke, N., & Singh, G. (2011, March–April). *Remittances across migrant generations: New theory and evidence from Urban Kenya*. Chapter presented at the annual meeting of the Population Association of America, Washington, DC.

Lu, Y., and Treiman, D. J. (2007). The Effect of Labor Migration and Remittances on Children's Education Among Blacks in South Africa. *California Center for Population Research Working Chapter.*

Lu, Y., and Treiman, D. J. (2011). Migration, remittances and educational stratification among blacks in apartheid and post-apartheid South Africa. *Social Forces*, *89*(4), 1119–1143.

Madhavan, S. (2004). Fosterage patterns in the age of AIDS: continuity and change. *Social Science and Medicine*, *58*(7), 1443–1454.

Madhavan, S. (2010). Early childbearing and kin connectivity in rural South Africa. *International Journal of Sociology of the Family*, 139–157.

Madhavan, S., Richter, L., Norris, S., and Hosegood, V. (2014). Fathers' Financial Support of Children in a Low Income Community in South Africa. *Journal of Family and Economic Issues*, 1–12.

Madhavan, S., Schatz, E., Clark, S., and Collinson, M. (2012). Child mobility, maternal status, and household composition in rural South Africa. *Demography*, *49*(2), 699–718.

Magadi, M. A., Madise, N. J., and Rodrigues, R. N. (2000). Frequency and timing of antenatal care in Kenya: explaining the variations between women of different communities. *Social science and medicine*, *51*(4), 551–561.

Mamiro, P. S., Kolsteren, P., Roberfroid, D., Tatala, S., Opsomer, A. S., and Van Camp, J. H. (2005). Feeding practices and factors contributing to wasting, stunting, and iron-deficiency anaemia among 3-23-month old children in Kilosa district, rural Tanzania. *Journal of Health, Population and Nutrition*, 222–230.

Marmot, M. G., Stansfeld, S., Patel, C., North, F., Head, J., White, I., Brunner, E., Feeney, A., Marmot, M.G., & Smith, G. D. (1991). Health inequalities among British civil servants: the Whitehall II study. The Lancet, 337(8754), 1387–1393.

Marteleto, L., Cavanagh, S. E., Prickett, K., & Clark, S. (2012, May). *The importance of family structures and instability in shaping adolescent transitions to adulthood in South Africa*. Chapter presented at the annual meeting of the Population Association of America, San Francisco, CA.

Masanja, H., de Savigny, D., Smithson, P., Schellenberg, J., John, T., Mbuya, C., Upunda, G., Boerma, T., Victoria, C., Smith, T., Mshinda, H. (2008). Child survival gains in Tanzania: analysis of data from demographic and health surveys. *The Lancet*, *371*(9620), 1276–1283.

McDaniel, A., and Zulu, E. (1996). Mothers, fathers, and children: Regional patterns in child-parent residence in sub-Saharan Africa. *African Population Studies*, *11*(1), 1–28.

Meekers, D. (1992). The process of marriage in African societies: A multiple indicator approach. *Population and development review*, 61–78.

Meyer, M. H. H. (2014). *Grandmothers at Work: Juggling Families and Jobs*. New York, NY: NYU Press.

Mezger Kveder, C. L., and Flahaux, M.-L. (2013). Returning to Dakar: A Mixed Methods Analysis of the Role of Migration Experience for Occupational Status. *World Development*, *45*, 223–238.

Monasch, R., and Boerma, J. (2004). Orphanhood and childcare patterns in sub-Saharan Africa: an analysis of national surveys from 40 countries. *Aids*, *18*, S55.

Mosley, W. H., and Chen, L. C. (1984). An analytical framework for the study of child survival in developing countries. *Population and development review*, 25–45.

Mott, F. L., and Moore, S. F. (1979). The causes of marital disruption among young American women: An interdisciplinary perspective. *Journal of Marriage and the Family*, 355–365.

Mrema, S., Kante, A. M., Levira, F., Mono, A., Irema, K., de Savigny, D., and Masanja, H. (2015). Health and Demographic Surveillance System Profile: The Rufiji Health and Demographic Surveillance System (Rufiji HDSS). *International journal of epidemiology*, *44*(2), 472–483.

Mwageni, E., Momburi, D., Juma, Z., Irema, M., & Masanja, H. (1998). *Tanzania Essential Health Interventions Project*. Dar es Salaam, Tanzania: Tanzania Ministry of Health.

Nakiyingi, J. S., Bracher, M., Whitworth, J. A., Ruberantwari, A., Busingye, J., Mbulaiteye, S. M., and Zaba, B. (2003). Child survival in relation to mother's HIV infection and survival: evidence from a Ugandan cohort study. *Aids*, *17*(12), 1827–1834.

National Bureau of Statistics, ICF Macro. (2011). *Tanzania Demographic and Health Survey, 2010 Final Report* (Report No. FR243). Dar es Salaam, Tanzania: NBS & Calverton, MD: ICF Macro.

Nobles, J. (2011). Parenting from abroad: Migration, nonresident father involvement, and children's education in Mexico. *Journal of Marriage and Family*, *73*(4), 729–746.

Notermans, C. (2004). Sharing Home, Food, and Bed: Paths of Grandmotherhood in East Cameroon. *Africa: Journal of the International African Institute*, *74*(1), 6–27.

Notermans, C. (2008). The Emotional World of Kinship Children's experiences of fosterage in East Cameroon. *Childhood*, *15*(3), 355–377.

Oucho, J. O. (1998). Recent internal migration processes in sub-Saharan Africa: Determinants, consequences and data adequacy issues. In R. E. Bilsborrow (Ed.), *Migration, urbanization, and development: New directions and issues* (pp. 89–120). New York, NY: United Nations Population Fund.

Oucho, J. O. (2002, April). *The relationship between migration and poverty in Southern Africa*. Chapter presented at the SAMP/LHR/HSRC Workshop on Regional Integration, Poverty, and South Africa's Proposed Migration Policy, Pretoria, South Africa.

Oya, C., and Sender, J. (2009). Divorced, Separated, and Widowed Women Workers in Rural Mozambique. *Feminist Economics*, *15*(2), 1–31.

Page, H. (1989). Childrearing versus Childbearing: Coresidence of Mother and Child in sub-Saharan Africa. In R. Lesthaeghe (Ed.), *Reproduction and Social Organization in sub-Saharan Africa* (pp. 401–441). Berkeley, California: University of California Press.

Palermo, T., and Peterman, A. (2009). Are Female Orphans at Risk for Early Marriage, Early Sexual Debut, and Teen Pregnancy? Evidence from Sub-Saharan Africa. *Studies in Family Planning*, *40*(2), 101–112.

Parker, E. M., and Short, S. E. (2009). Grandmother Coresidence, Maternal Orphans, and School Enrollment in Sub-Saharan Africa. *Journal of Family Issues*, *30*(6), 813.

Parreñas, R. S. (2005). *Children of global migration: Transnational families and gendered woes*. Redwood City, CA: Stanford University Press.

Parreñas, R. S. (2008). Transnational fathering: Gendered conflicts, distant disciplining and emotional gaps. *Journal of Ethnic and Migration Studies*, *34*(7), 1057–1072.

Plummer, M. L., Wamoyi, J., Nyalali, K., Mshana, G., Shigongo, Z. S., Ross, D. A., and Wight, D. (2008). Aborting and suspending pregnancy in rural Tanzania: an ethnography of young people's beliefs and practices. *Studies in Family Planning*, *39*(4), 281–292.

Porter, L., Hao, L., Bishai, D., Serwadda, D., Wawer, M. J., Lutalo, T., and Gray, R. (2004). HIV status and union dissolution in sub-Saharan Africa: the case of Rakai, Uganda. *Demography*, *41*(3), 465–482.

Posel, D., Fairburn, J. A., and Lund, F. (2006). Labour migration and households: A reconsideration of the effects of the social pension on labour supply in South Africa. *Economic Modelling*, *23*(5), 836–853.

Reher, D. S., and Gonzalez-Quinones, F. (2003). Do parents really matter? Child health and development in Spain during the demographic transition. *Population studies*, *57*(1), 63–75.

Reniers, G. (2003). Divorce and remarriage in rural Malawi. *Demographic Research*, *1*(chapter 1), 175–206.

Reniers, G. (2008). Marital strategies for regulating exposure to HIV. *Demography*, *45*(2), 417.

Richter, L. M., and Desmond, C. (2008). Targeting AIDS orphans and child-headed households? A perspective from national surveys in South Africa, 1995–2005. *AIDS care*, *20*(9), 1019–1028.

Ronsmans, C., Chowdhury, M. E., Dasgupta, S. K., Ahmed, A., and Koblinsky, M. (2010). Effect of parent's death on child survival in rural Bangladesh: a cohort study. *The Lancet*, *375*(9730), 2024–2031.

Ross, C. E., and Wu, C. (1995). The links between education and health. *American sociological review*, 719–745.

Rutstein, S., and Johnson, K. (2004). *The DHS Wealth Index* (Comparative Report No. CR6). Calverton, Maryland: MEASURE DHS+, ORC Macro.

Rwezaura, B. (2000). The value of a child: marginal children and the law in contemporary Tanzania. *International Journal of Law, Policy and the Family*, *14*(3), 326–364.

Sankoh, O., and Byass, P. (2012). The INDEPTH Network: filling vital gaps in global epidemiology. *International Journal of Epidemiology*, *41*(3), 579–588.

Sear, R. (2008). Kin and child survival in rural Malawi. *Human Nature*, *19*(3), 277–293.

Sear, R., and Coall, D. (2011). How much does family matter? Cooperative breeding and the demographic transition. *Population and development review*, *37*(s1), 81–112.

Sear, R., and Mace, R. (2008). Who keeps children alive? A review of the effects of kin on child survival. *Evolution and Human Behavior*, *29*(1), 1–18.

Sear, R., Steele, F., McGregor, I. A., and Mace, R. (2002). The effects of kin on child mortality in rural gambia. *Demography*, *39*(1), 43–63.

Serra, R. (2009). Child fostering in Africa: When labor and schooling motives may coexist. *Journal of Development Economics*, *88*(1), 157–170.

Sibanda, A. (2011). Ethnic differences in the living arrangements of children in South Africa. *Journal of Comparative Family Studies*, 479–508.

South, S. J., and Spitze, G. (1986). Determinants of divorce over the marital life course. *American Sociological Review*, 583–590.

Tacoli, C. (2001). Urbanisation and migration in sub-Saharan Africa: Changing patterns and trends. In M. E. de Bruijn, R. A. van Dijk, & D. W. J. Foeken (Eds.), Mobile Africa: Changing patterns of movement in Africa and beyond, (pp. 141–152). Boston, MA: Brill Leiden.

Takyi, B. K. (2001). Marital instability in an African society: Exploring the factors that influence divorce processes in Ghana. *Sociological focus*, *34*(1), 77–96.

Takyi, B. K., and Broughton, C. L. (2006). Marital stability in Sub-Saharan Africa: Do women's autonomy and socioeconomic situation matter? *Journal of family and economic issues*, *27*(1), 113–132.

Takyi, B. K., and Gyimah, S. O. (2007). Matrilineal family ties and marital dissolution in Ghana. *Journal of Family Issues*, *28*(5), 682–705.

Teachman, J. D. (2002). Stability across cohorts in divorce risk factors. *Demography*, *39*(2), 331–351.

Therborn, G. (2004). *African families in a global context*. Uppsala, Sweden: Nordic Africa Institute.

Thiombiano, B. G., LeGrand, T. K., and Kobiané, J.-F. (2013). Effects of parental union dissolution on child mortality and schooling in Burkina Faso. *Demographic Research 29,*(chapter 29) 797-816.

Tienda, M. (2006). *Africa on the move: African migration and urbanisation in comparative perspective*. Johannesburg, South Africa: Wits University Press.

Townsend, N., Madhavan, S., and Garey, A. I. (2006). Father presence in rural South Africa: historical changes and life-course patterns. *International Journal of Sociology of the Family*, 173–190.

Townsend, N., Madhavan, S., Tollman, S., Garenne, M., and Kahn, K. (2002). Children's residence patterns and educational attainment in rural South Africa, 1997. *Population Studies*, *56*(2), 215–225.

Tsai, M.C., and Dzorgbo, D.B.S. (2012). Familial Reciprocity and Subjective Well-being in Ghana. *Journal of Marriage and Family*, *74*(1), 215–228.

UNICEF. (2014). *Committing to Child Survival: A Promise Renewed-Progress Report*. New York: United Nations Children's Fund.

United Nations Children's Fund. (2013). *Towards an AIDS-Free Generation: Children and AIDS, Sixth Stocktaking Report*. New York: UNICEF.

United Nations Inter-agency Group for Child Mortality Estimation. (2014). *Levels and Trends in Child Mortality*. New York: United Nations Children's Fund.

Urassa, M., Boerma, J. T., Ng'weshemi, J. Z., Isingo, R., Schapink, D., and Kumogola, Y. (1997). Orphanhood, child fostering and the AIDS epidemic in rural Tanzania. *Health Transition Review*, 141–153.

Vandermeersch, C. (2002). Child fostering under six in Senegal in 1992-1993. *Population (english edition)*, *57*(4), 659–685.

Verhoef, H., and Morelli, G. (2007). " A Child Is a Child": Fostering Experiences in Northwestern Cameroon. *Ethos*, *35*(1), 33–64.

Vespa, J., Lewis, J. M., and Kreider, R. M. (2013). *America's Families and Living Arrangements: 2012* (No. P20-570). United States Census Bureau.

Wardlaw, T., You, D., Hug, L., Amouzou, A., and Newby, H. (2014). UNICEF Report: enormous progress in child survival but greater focus on newborns urgently needed. *Reproductive health*, *11*(1), 82.

Ware, H. (1984). Effects of Maternal Education, Women's Roles, and Child Care on Child Mortality. *Population and Development Review*, *10*, 191–214.

Weinreb, A., Gerland, P., and Fleming, P. (2008). Hotspots and coldspots: Household and village-level variation in orphanhood prevalence in rural Malawi. *Demographic research*, *19*(chapter 32), 1217.

Weisner, T. S., Bradley, C., and Kilbride, P. L. (1997). *African families and the crisis of social change*. Greenwood Publishing Group.

Whyte, S. R., and Whyte, M. A. (2004). Children's children: Time and relatedness in eastern Uganda. *Africa*, *74*(01), 76–94.

Winans, E. V. (1964). The Shambala Family. In R. F. Gray and P. H. Gulliver (Eds.), *The Family Estate in Africa: Studies in the Role of Property in Family Structure and Lineage Continuity* (pp. 35–62). Great Britain: Routledge.

Yabiku, S. T., Agadjanian, V., and Cau, B. (2012). Labor migration and child mortality in Mozambique. *Social Science and Medicine*, *75*(12), 2530–2538.

Ye, Y., Wamukoya, M., Ezeh, A., Emina, J. B. O., and Sankoh, O. (2012). Health and demographic surveillance systems: a step towards full civil registration and vital statistics system in sub-Sahara Africa? *BMC Public Health*, *12*(1), 741.