

The Impact of Past Conflicts and Social Disruption on the Elderly in Cambodia

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WAR, VIOLENCE, and political conflict have catastrophic demographic consequences in the form of excess mortality and forced displacement of populations. Many conflicts since World War II have been fought between ethnic or ideological groups in impoverished areas of the world where infrastructure is weak and means of subsistence are already threatened (Pedersen 2002). Cambodia is an extreme example. By destroying property, disrupting economic activity, damaging health services, and breaking up families, civil wars around the world generally, and in Cambodia specifically, have resulted in deprivations, inhumane living conditions, and severe distress. The full burden of wars on developing-country populations involves both effects that are direct and immediate, such as deaths to combatants and civilians, mass migrations, and refugee flows, and effects that are indirect and longer term, such as the suffering caused by the destruction of social structures, the undermining of health services, and the disruption of family cohesion. In poor countries, the indirect effects are likely to be widespread and to linger long after the end of conflict.¹

The demographic consequences of conflict and violence in the developing world are receiving increased attention (Brunborg and Urdal 2005). A chief concern is estimating the excess mortality attributed to particular wars (Pedersen 2002). For instance, a recent study by Guha-Sapir and van

Panhuis (2003) showed the risk of civilian deaths in Sudan, Somalia, the Democratic Republic of Congo, and Afghanistan to be substantially higher during and immediately after civil wars than before the conflicts. Estimation of excess mortality during and after wartime is complicated by the fact that war is frequently accompanied by the breakdown of civil record-keeping, necessitating the use of indirect methods of estimation such as comparisons of population sizes before and after conflict, or surveys of surviving populations (Murray et al. 2002).

The consequences of conflict and violence have yet to be linked to population aging in developing countries. The disruption of regular daily life and the breakdown of the social fabric that have accompanied war in the developing world have potential long-term effects on the family, which in turn may influence the prospects for successful aging (Pedersen 2002; Schwab et al. 1995).

In this article, we examine some of the long-term consequences of the civil war that took place in Cambodia in the 1970s, and the radical revolutionary regime that it ushered in, for the current generation of older people in Cambodia. The analysis concerns individuals aged 60 years and older in 2004, when a survey of Cambodia's elderly population was undertaken; these individuals were aged 30 and older during the height of the unrest. The war and its aftermath resulted in a substantial number of deaths, in addition to the displacement of masses of individuals and the dismantling of families. The data we examine allow us to link deaths of family members occurring some 30 years earlier to measures related to the welfare of older adults, including indicators of living arrangements, support, and economic well-being. Our analysis investigates the extent to which the surviving generation of older adults experienced the deaths of children and spouses, forced migration, and family separation and explores the long-term association between war-related events and measures of current well-being.

Conflict and violence in Cambodia

The years immediately following Cambodia's independence from France in 1953 were politically and militarily complex. The leadership of Prince Norodom Sihanouk was unstable and often challenged, particularly by left-leaning groups, and the response of the Prince and his government was often repressive. The internal conflicts that characterized the period eventually led to a right-wing military coup by General Lon Nol in March 1970. The regime's hold on the country, however, was weakened by the American bombing of Cambodia during the American-Vietnamese war, and this allowed a radical insurgency, the Khmer Rouge, to seize power in 1975 (Chandler 2000). Led by Pol Pot, fueled ideologically by radical Communist principles, and envisioning an ideal agrarian state, the Khmer Rouge forc-

ibly removed individuals from urban centers and placed them into labor camps (Chandler 1999). Former urban dwellers as well as others were forced to work long hours with insufficient sustenance and virtually no access to health care. The Khmer Rouge abolished currency and the educational system; families were separated under the notion that observance should be to the state rather than to relatives; and the ruling government isolated the country from most of the rest of the world.

According to accounts of survivors and historians, the Pol Pot–led Khmer Rouge was a particularly brutal and genocidal regime (Chan 2004; Chandler 2000; Chandler 1999; de Walque 2005; Heuveline 1998; Kiernan 2003; Ea 1981; Neupert and Prum 2005; Ung 2000). Hundreds of thousands of executions took place as the regime attempted to rid itself of dissenters. Educators, all those with high levels of education, and all those in any way connected with the Lon Nol government were deemed a threat to the regime and many were killed. At the same time, the regime floundered economically. Food was constantly in short supply and rations for workers were inadequate. Disease and famine resulted.

In January of 1979 Vietnam invaded Cambodia and largely defeated the Khmer Rouge forces, who retreated into remote enclaves. The initial effect was another mass movement of the population, as people began to repatriate and look for family members from whom they had been separated during the previous four years. During the following decade, localized conflicts arose between the Khmer Rouge and the Vietnamese-allied government forces. Although the Vietnamese attempted to establish a measure of independence for Cambodia, tens of thousands of troops remained and Vietnam maintained control of the country. But, in September 1989 the Vietnamese withdrew their troops, partly because of the growing independence of Cambodia's own government and partly because the Soviet Union reduced its support to Vietnam (Chandler 2000). The United Nations began assisting Cambodia to prepare for its first set of postwar elections, which were held in 1993.

Demographic consequences of the Khmer Rouge period

It is difficult to determine the number of excess deaths that occurred in Cambodia during the period of conflict and violence, although several estimates have been made based on demographic analyses (Banister and Johnson 1993; Heuveline 1998; Ea 1981; Neupert and Prum 2005). The population of Cambodia in 1975 at the start of the Khmer Rouge regime was about 7 million. Over the next decade up to 2 million may have died as a result of execution, famine, disease, and other war-related causes, while another half-million migrated out of the country, many to refugee camps

along the border with Thailand. Recent demographic analysis has indicated that individuals with an urban or educated background were particularly likely to have died during Khmer Rouge rule (de Walque 2005).

Neupert and Prum (2005) conducted demographic reconstructions and simulations in order to create population pyramids for Cambodia dating back to 1965 and projected into the future, and to compare the current population structure with what would have been expected had no excess mortality occurred. Their results indicate that excess mortality was highly unbalanced, with about two-thirds male deaths and one-third female deaths. There was a significant reduction in fertility during the Khmer Rouge period and a small baby boom during the immediate aftermath. These effects are evident in the current population and appear as clear indentations in population pyramids constructed using the 1998 census. For instance, there is a small cohort aged 20–24 and a much smaller number of males than females aged 40–74, resulting in an unusual sex ratio among adults. Simulations indicate that these consequences will be visible well into the future.

Since 1989 Cambodia has been relatively peaceful, but socioeconomic development has been slow and people still face widespread poverty, inadequate health care resources, and underdeveloped and underfunded roads and other infrastructure (Annear 1998; Beresford et al. 2004; Coates 2005; Hugué et al. 2000; Kola 2004; Lanjouw, Macrae, and Zwi 1999; Ott 1997). Indicators of poor living conditions can be seen in the percent literate among the adult population (74 percent compared to over 90 percent for most other countries in the region), the percent living with HIV/AIDS (2.6 percent compared to 0.5 percent for Southeast Asia as a whole), life expectancy at birth (56 years compared to 69 for the region), and infant mortality (95 deaths per 1,000 live births compared to 39 for the region) (Population Reference Bureau 2005; World Bank 2005).

Older adults in Cambodia

The isolation of Cambodia during and after the rule of the Khmer Rouge, and the abolishment of public media and educational and research institutions, meant that very little information about the country made its way to the rest of the world. The 1998 population census, the first conducted since 1962 (Hugué et al. 2000), showed the country to be predominantly rural-agrarian with one major urban center, Phnom Penh, and several much smaller cities (National Institute of Statistics 1999). The ethnicity of the vast majority can be described as Khmer, with a small percent being Chinese, Khmer-Chinese, or Cham. The predominant religion is Buddhism, with small fractions Muslim and Christian. Although agriculture is by far the main occupation in Cambodia, an increase in clothing manufacturers and a rise in the proportion working in garment factories in recent years have led to a rise in migration

from rural areas to cities among adults seeking employment in the clothing industry. Still, the most common migration stream is within rural areas.

According to the 2000 Demographic and Health Survey, slightly fewer than 6 percent of the total population (estimated for that year as about 13 million) are aged 60 and older, although about one in four households contains an older adult. The little written about the social life of older adults in Cambodia suggests that, like older adults elsewhere in the region, they rely on family members for physical, material, and psychological well-being (Kato 2000; Knodel et al. 2005; Zimmer and Kim 2001). Like other Asian elderly, those in Cambodia rarely live alone and most coreside with an adult child. For instance, the 1997 Socio-Economic Survey of Cambodia revealed that among Cambodians aged 60 and older, only 3 percent lived alone while 80 percent lived with at least one of their children (Zimmer and Kim 2001). Coresidence with a child in Cambodia, as elsewhere in Asia, is considered to be an important way in which physical assistance is provided to older adults and therefore is itself an indicator of well-being. As in neighboring Thailand, which shares a common cultural heritage dominated by Theravada Buddhism, but unlike the case in Vietnam with its legacy of Confucian-influenced traditions, older Cambodians are more likely to live with a married daughter than a married son. Intergenerational exchanges are a critical source of material support for older Cambodians since very few receive a pension, have any lifetime savings, or receive health insurance or welfare benefits.

While social life for older Cambodians may be generally similar to life for older adults elsewhere in the region, they live within a context of poverty that pervades the country (Coates 2005). As a result, they are more likely than those elsewhere to be economically and materially deprived. Cambodia is among the poorest countries in the region, with a gross national product per capita that only surpasses that of Laos. Average incomes are very low and over three-fourths of Cambodia's population live on less than two dollars a day (Population Reference Bureau 2005). Almost half of the elderly population live in dwellings with earth, bamboo, or thatched floors, over half have no toilet facilities, and most have few if any household amenities (Knodel et al. 2005). Most older Cambodians, particularly older women, are unable to read. Access to health care of reasonable quality is difficult, particularly in rural areas. Recent evidence suggests that older Cambodians may be in poorer health than older adults in neighboring countries (Kato 2000; Knodel et al. 2005; Zimmer 2005). Preliminary evidence also suggests that the civil wars have affected living arrangements. Zimmer and Kim (2001) reported that more than 10 percent of older-adult households consist of elderly women living with their widowed daughters, an unusually high proportion that may be a result of deaths to own spouses and to husbands of daughters during the 1970s.

Alternative hypotheses about the well-being of elderly Cambodians

The research questions we address are: (1) To what extent did the current generation of older adults in Cambodia experience negative events during the civil war and its aftermath, including death of children and spouses, forced migration, and family separation? (2) Has the experience of deaths of children and spouses had a long-term impact on common indicators of older-adult welfare, including those related to household structure, receipt of material support from family, and general economic well-being? Because many individuals and indeed entire families die during periods of war and violence, any analysis of a postwar population must be aware of the possibility that selection factors influence the make-up of the sample. Therefore, we are cautious to phrase our research questions around the experiences of and effects on the current generation of elderly, understanding that they are survivors.

Our discussion of older adults in Cambodia suggests that they are highly dependent upon their family for their welfare. As a result, it is necessary for them to be physically proximate to or otherwise integrated with their family if their comfortable survival is to be assured. The conflict and violence that occurred in Cambodia, resulting in excess mortality, have depleted many of these older adults of primary sources of support. A commonsensical approach might dictate that these losses would result in parallel reductions in support, since the death of a child or a spouse during the war leaves fewer family members available from whom to receive transfers or with whom to reside. This is particularly the case given that the current generation of older adults would have been at least 35 years of age at the end of the Khmer Rouge period and therefore beyond the age where additional births to replace lost children, and perhaps even remarriage, were likely responses to fatalities. Thus, one hypothesis is that, on an individual level, the greater the number of deaths, the less favorable would be current well-being, other things being equal.

An alternative hypothesis is that other mediating influences, in particular normative family behavior, high fertility, and pervasive poverty, would largely moderate or even cancel out the impact of losses of a child or spouse associated with the Khmer Rouge period and its aftermath. Several arguments can be made that support this alternative hypothesis. First, normative aspects of family integration in Cambodia that hold the family responsible for the well-being of older members also suggest that any surviving family members, even if few in number, would remain obligated to provide support. Research elsewhere in Asia has shown family size to be less related to coresidence and the receipt of material exchange than expected given the straightforward additive assumption underlying the first hypothesis (Knodel, Chayovan, and Siriboon 1992; Zimmer and Kwong 2003). Only in cases where entire families or at least large numbers were lost, while the older adults sur-

vived, might there be any appreciable long-term effects on support. To examine this, our analysis will compare the impact of the death of one child versus the death of multiple children on indicators of current well-being.

Second, and related, most older adults living in Cambodia today are likely to have at least several surviving adult children, as well as grandchildren, as a result of high fertility in the years preceding the Khmer Rouge reign and continued high fertility following its demise. The course of fertility in Cambodia, including a conception dearth during the Khmer Rouge period and a baby boom shortly afterward followed by levels only modestly lower than before, is consistent with the common understanding of the relationship between societal hardship and fertility (Agadjanian and Prata 2002; Eversley 1957; Lindstrom and Berhanu 1999; Heuveline and Poch 2005). Indeed, fertility has remained high even to the present time, with rates exceeding four children per woman (United Nations 2005). This means that most surviving older adults have several children on whom to rely for support, even if several others died during the period of conflict.

Third, while much of the region has experienced a degree of socioeconomic development over the past several decades, Cambodia is still beset with abject poverty. As some have argued, war further impoverishes already disadvantaged populations (Murray et al. 2002; Pedersen 2002). Thus, part of Cambodia's continuing development problems as well as its inability to provide meaningful formal channels of support may be a consequence of the earlier period of conflict and disruption. One could argue then that the war resulted in long-term damage to the entire cohort surviving to their elder years.

Given the pervasiveness of poverty in the country, material support for older adults, at least on any appreciable level, may simply be unavailable regardless of one's experiences during the war. This view, coupled with the widespread nature of the Cambodian war, may also make it difficult to distinguish between those who were and were not affected. In sum, normative family behavior, persistent high fertility, and pervasive poverty may mediate the long-term impact of the Khmer Rouge period on aging survivors, thereby moderating or even eliminating clear associations at the individual level.

Data and methods

Data for this study come from the 2004 Survey of the Elderly in Cambodia, conducted by the Department of Sociology at the Royal University of Phnom Penh in collaboration with the University of Michigan's Population Studies Center and the Population Council. The survey involved in-person interviews of 1,273 adults aged 60 and older, conducted between April and October 2004. Interviews lasted approximately one hour and covered such topics as living conditions and economic, social, and physical well-being. Specific questions

were also included to permit the determination of the impact of Cambodia's turbulent history on the current situation of respondents. The questionnaire asked about the timing and circumstances surrounding deaths of children and spouses and the experience of forced migration during periods of political turmoil. It also included questions about respondents' current levels of social support. Interviewers were students and staff from the Royal University of Phnom Penh. In a small number of instances in which the older adult selected for interview was incapable of responding to questions, questionnaires were completed using a family member as a proxy.

Cambodia consists of 24 provinces, the six most populous of which account for over 50 percent of the total population: Battambang, Kampong Cham, Kandal, Phnom Penh, Prey Veng, and Takeo. These six were purposively chosen for inclusion in the study. The sampling technique followed a multiple stage, systematic probability design that relied on the selection of administrative villages using a listing provided by the National Institute of Statistics (2000). Because of an oversampling in Phnom Penh, we used a weighting procedure to adjust appropriately, and the final weighted sample is representative of the six provinces. In general, the weighted sample produces distributions for most demographic characteristics that match those found in other representative surveys conducted in Cambodia. Table 1 presents both weighted and unweighted distributions with respect to several key demographic characteristics. More detailed information about the survey, sampling, weighting, and characteristics of the respondents is reported elsewhere (Knodel et al. 2005).

Our analysis is divided into two sections. We first examine the extent to which today's older generation in Cambodia experienced several demographic events during the Khmer Rouge period. On the basis of responses to survey items, we examine reports of the death of children, the death of a spouse, migration, and family separation, generally comparing the percent experiencing these events prior to, during, and after the Khmer Rouge period in order to determine the extent to which the period was unusual. Where we have enough detail available in the data, we also examine whether these events were experienced during the four-year period immediately before or immediately after the Khmer Rouge regime. Specifically, we are able to look at the first four years after the Khmer Rouge regime with respect to death of children, and four years preceding and after with respect to death of a spouse. We do this to show the chance of deaths occurring during standardized time periods, since the Khmer Rouge period was roughly four years long. It is difficult to be accurate about timing. The Khmer Rouge seized power in the city of Phnom Penh in April 1975, and the Vietnamese invaded in January 1979. In some areas, however, the Khmer Rouge achieved power earlier and considerable struggle persisted after their overthrow. Only more recently have the Khmer Rouge been completely eliminated from a small enclave of the northwest region of the country (an area not included

TABLE 1 Selected sample characteristics showing weighted and unweighted percent distributions of the sample of Cambodians aged 60 and older (N = 1,273), Survey of the Elderly in Cambodia, 2004

Characteristic	Weighted distribution	Unweighted distribution
Sex		
Male	40.2	36.4
Female	59.8	63.6
Residence		
Urban	9.4	20.6
Rural	90.6	79.4
Age		
60–64	32.8	35.9
65–69	26.5	25.5
70–74	20.8	19.2
75 +	19.8	19.3
Marital status		
Men		
Currently married	81.6	78.0
Widowed	15.8	19.2
Other	2.5	2.8
Women		
Currently married	30.7	17.8
Widowed	64.3	76.3
Other	4.9	5.9
Literacy		
Men		
Can read well	39.3	44.7
Can read with difficulty	33.0	30.5
Cannot read	27.7	24.8
Women		
Can read well	4.9	6.3
Can read with difficulty	14.7	16.7
Cannot read	80.4	77.0

in our sample). For this analysis we define the four years preceding the Khmer Rouge period as 1971 to 1975, the Khmer rouge period as 1975 to 1979, and the four years after the Khmer Rouge period as 1979 to 1983.

In addition to looking at the extent to which deaths occurred, we compare the chances deaths were caused by violence versus other causes (e.g., illness, accidents). Violent causes include those where violence was stated outright to be the cause of death of the family member, as well as situations where the member was said to have disappeared, which in the Cambodian

vernacular often means they were taken away by soldiers and presumably subsequently killed. Deaths due to malnutrition and illness that are byproducts of the war are not specifically coded. Although violent deaths were almost exclusively experienced between 1975 and 1979, our results indicate that deaths from nonviolent causes also peaked during the Khmer Rouge period.

To examine migration, the survey asked about moving during four periods of Cambodian history: the period during which the Lon Nol regime controlled the central government between 1970 and 1975; the Khmer Rouge period; the period of Vietnamese control between 1979 and 1989; and the most recent period from 1989 to 2004 when a new Cambodian government was established after several years of United Nations stewardship of the country. The survey asked the reasons for migration, and we examine the probability of any migration versus forced migration during these periods. Since we do not have exact dates of migration, however, we cannot compare standardized time periods for this topic. Forced migration includes the responses of fleeing the political situation or violence and being forced to move. The survey also asked whether moves resulted in separation of the respondent from his or her family. We examine the probability that respondents experienced the combination of forced migration and separation from family. Results show that forced migration and forced migration together with family separation peaked during the Khmer Rouge period, although again it is possible that there was some spillover depending upon where in the country the individual was living prior to the period. Repatriation after forced migration was typical following the ouster of the Khmer Rouge, and this is considered an unforced move. We also examine migration by rural/urban residence, which for these purposes is measured as the place of residence at the start of the period in question.

The second section of the analysis looks at whether deaths of children and spouse have long-term impacts on family composition, living arrangements, support, and the material situation of the current generation of older adults, thus bearing on the hypotheses discussed above. For this part of the analysis, we do not consider migration since we have no a priori expectations about its long-term impact on support in Cambodia. We associate deaths of children and spouses with the number of children currently alive, current marital status and living arrangements, the receipt of material support, and measures relating to current economic well-being.

Demographic events during the Khmer Rouge period, 1975 to 1979

Death of children

In 1975, just before the Khmer Rouge takeover, Cambodia's fertility rate was estimated at 5.5 children per woman. Many children did not survive to

adulthood. Life expectancy at birth was about 40 years and the infant mortality rate was about 180 deaths per 1,000 live births (United Nations 2005). In our survey, 1,243 older adults reported the deaths of 2,159 children, an average of 1.75 per older adult. (Thirty cases answered by proxy were not asked about the death of children.) Fifty-one percent of these deaths occurred during the four-year Khmer Rouge period, while 27 percent occurred before and 22 percent after. Thirty-six percent of deaths were reported to be from violent causes, but more than 90 percent of violent deaths occurred during the Khmer Rouge period and account for about two-thirds of deaths during this time.

Table 2 shows the percent of older adults reporting the death of at least one child before, during, and after the Khmer Rouge period, from any cause and from violence. Deaths to children aged 11 and older are separated out because additional examination of the data revealed that most deaths prior to age 11 were from nonviolent causes, whereas deaths to those aged 11 and older during the Khmer Rouge period are almost exclusively due to violence. It is also possible that many of the nonviolent deaths, both before and after age 11, were due to causes brought about by conditions exacerbated by the Khmer Rouge, such as malnutrition, diseases incurred as a result of poor health conditions, and lack of health services to treat disease.

TABLE 2 Percent of older adults experiencing the death of a child by sex of child, age of child at time of death, cause, and period of death (N = 1,243), Survey of the Elderly in Cambodia, 2004

Cause of death/period	All ages			Age 11 and older		
	Both sexes	Sons	Daughters	Both sexes	Sons	Daughters
All causes						
All periods ^a	75.5	59.0	46.8	48.6	36.2	24.3
Before Khmer Rouge ^b	29.2	19.9	17.2	5.6	3.9	2.5
During Khmer Rouge ^c	42.8	32.8	22.2	27.2	21.2	11.8
Vietnamese control ^d	30.1	19.2	14.4	24.3 [#]	15.0	11.4 [#]
Four years immediately after Khmer Rouge	6.7	3.7	3.5	3.3	1.9	1.5
Violence^e						
All periods ^a	31.8	25.5	13.5	26.6	21.5	10.2
Before Khmer Rouge ^b	2.2	2.1	0.4	1.9	1.9	0.3
During Khmer Rouge ^c	28.6	22.7	12.9	23.2	18.5	9.4
Vietnamese control ^d	2.2	1.6	0.6	2.1	1.6	0.5
Four years immediately after Khmer Rouge	0.4	0.3	0.1	0.3	0.3	0.0

^a1970–2004. ^b1970–75. ^c1975–79. ^d1979–89. ^eIncludes disappearance.

NOTES: Proxy respondents are omitted (N=30). All comparisons of the percent experiencing deaths during the Khmer Rouge versus the percent experiencing deaths during other periods are significant at $p < .01$, except as indicated by #.

While 75 percent of the sample reported the death of at least one child at some point, the likelihood of experiencing a death was greater during the Khmer Rouge period than before or after (43 percent versus 29 and 30 percent respectively), despite its relatively short duration. The contrast is far more striking if the comparison is limited to the experience of violence in the four years immediately following Khmer Rouge rule. Twenty-nine percent reported experiencing a child death due to violence under the Khmer Rouge in comparison to about 2 percent before or after the period. Deaths of sons were more common than deaths of daughters, and sons' deaths were more likely to be due to violence.

To experience a child death under the Khmer Rouge reign, an individual needed to have at least one child alive during the period. Overall, respondents had an average of 6.3 children ever born. The bulk of these births (75 percent) occurred prior to the Khmer Rouge takeover, and nearly all respondents (96 percent) had at least one living child at the time of the Khmer Rouge. Therefore, nearly all individuals were at risk of losing a child during the period. In addition, a vast majority (83 percent) had at least one child aged 11 or older by the time of the Khmer Rouge regime.

As Table 2 shows, 49 percent lost a child aged 11 and older during all periods, with 27 percent reporting the death to a child 11 or older during the Khmer Rouge period, primarily due to violent causes. Again, differences between the Khmer Rouge period and the subsequent four years are all the more striking. Like deaths at all ages, sons aged 11 and older were more likely lost than were daughters. Although the figures reported in Table 2 refer to the percent who experienced the death of at least one child, we note that 22 percent report multiple children dying during the Khmer Rouge period (not shown in Table 2).

Death of a spouse

Marriage is nearly universal among this sample of older Cambodians.² By the time of the Khmer Rouge takeover in 1975, 98 percent of the current sample had already married (1 percent of the sample never married). About 11 percent of those married before 1975 experienced a spouse's death before the Khmer Rouge takeover, but about half of these individuals had remarried by then. Thus, nearly the entire sample was exposed to the possibility of a spouse dying at some time, while a vast majority were exposed to the possibility of a spouse's death during the Khmer Rouge period.

As Table 3 shows, more than half of the sample lost a spouse at some point. The deadly impact of the Khmer Rouge on loss of a spouse is particularly evident when comparisons are made with the four years before and after their reign. A clear sex difference is also evident: about two-thirds of women compared to one-third of men reported the death of a spouse. Some of the difference is a consequence of generally higher mortality rates among

TABLE 3 Percent of older adults, by sex, experiencing the death of a spouse by cause and period of death, Survey of the Elderly in Cambodia, 2004

Cause of death/period	Both sexes (N=1,258)	Men (N=463)	Women (N=795)
All causes			
All periods ^a	52.8	30.9	67.8
Before Khmer Rouge ^b	10.9	8.0	12.9
During Khmer Rouge ^c	16.1	5.9	23.1
Vietnamese control ^d	28.0	19.5	33.8
Four years immediately before Khmer Rouge	5.3	2.5	7.2
Four years immediately after Khmer Rouge	4.1	3.1	4.8
Violence^e			
All periods ^a	10.8	2.1	16.6
Before Khmer Rouge ^b	0.5	0.2	0.8
During Khmer Rouge ^c	10.0	1.9	15.5
Vietnamese control ^d	0.2	0.0	0.3
Four years immediately before Khmer Rouge	0.5	0.0	0.8
Four years immediately after Khmer Rouge	0.0	0.0	0.0

^a1970–2004. ^b1970–75. ^c1975–79. ^d1979–89. ^eIncludes disappearance.

NOTES: Those never married are omitted (N=15). All comparisons of the percent experiencing deaths during the Khmer Rouge versus the percent experiencing deaths during other periods are significant at $p < .01$.

men at older ages. But it is also clear that the Khmer Rouge period was a time of a great many deaths of spouses of today's surviving women. About 23 percent of women report that a spouse died under the Khmer Rouge, versus only about 6 percent of men. Over 15 percent of women report a spouse died due to violence under the Khmer Rouge, compared to only about 2 percent of men. In contrast, elderly Cambodians are unlikely to have experienced the death of a spouse due to violence any time before or after the Khmer Rouge rule.

Forced migration and family separation

Although forced migration and family separation are common events during periods of conflict and political change, the Cambodian experience is unique with respect to the totality of forced migrations among those who were living in urban areas. Individuals were often required to move by foot and leave all their possessions behind; they were forced into labor camps, where they were considered to be less than full-right citizens and were often treated harshly (Chandler 2000; Kiernan 1996).

Table 4 shows the likelihood that an older Cambodian moved at least once between communities during four periods of Cambodian history. The top panel shows the percent who moved for any reason. Many older Cam-

TABLE 4 Percent of older adults moving for any reason, forced to move, and experiencing forced migration and family separation, during selected periods of Cambodian history, by place of residence at the start of the period, Survey of the Elderly in Cambodia, 2004

Reason for moving/period	All residents	Lived in urban area	Lived in rural area
Any reason			
Lon Nol, 1970–75	23.3	27.6	22.6
Khmer Rouge, 1975–79	66.2	97.7	62.5
Vietnamese, 1979–89	59.4	61.9	59.4 [#]
Current, 1989–2004	7.7	10.1	7.3
Forced to move^a			
Lon Nol, 1970–75	15.5	17.9	15.2
Khmer Rouge, 1975–79	63.0	97.0	59.0
Vietnamese, 1979–89	2.2	4.8	2.2
Current, 1989–2004	0.2	0.5	0.2
Forced migration and family separation			
Lon Nol, 1970–75	4.0	6.6	3.5
Khmer Rouge, 1975–79	19.2	38.1	16.8
Vietnamese, 1979–89	0.7	0.0	0.7
Current, 1989–2004	0.2	0.0	0.2

^aIncludes fleeing violence; in case of multiple moves, refers to at least one move being for those reasons. NOTES: Experiences of moving are not substantially different between men and women. Differences between urban and rural residence are significant only during the Khmer Rouge period. Proportions during Lon Nol, Vietnamese, and current periods are significantly different from during the Khmer Rouge at $p < .01$ in all cases except as indicated by #. The table includes 1,255 individuals, with those living in other countries during any period being omitted ($N=18$). Urban/rural N's at the start of each period are: Lon Nol 305/ 950; Khmer Rouge 261/ 994; Vietnamese 38/1,217; current 431/ 824.

bodians moved during the Lon Nol, Khmer Rouge, and Vietnamese periods. Very few have moved since.

The middle panel shows the percent who were forced out of their homes. Sixty-three percent of the sample report that they were forced to move during the Khmer Rouge period. Some forced migration took place during the Lon Nol period, and some of this is likely due to the start of the Khmer Rouge campaign in parts of the country outside of Phnom Penh. Although 59 percent report having moved during the period after Khmer Rouge rule, only 2 percent report forced migration during this period. Further examination of the reasons for migration verifies that large numbers during the Vietnamese period were moving due to repatriation after the end of the civil war. Indeed, more than 80 percent of movers in the post-Khmer Rouge period listed repatriation as a reason for their migration (not shown in Table 4).

The bottom panel shows the percent of Cambodians who both were forced to move and were separated from their family as a result. Nineteen percent experienced the combination of these events during the Khmer

Rouge period. This implies that more than one in four forced moves was accompanied by family separation.

The chances of experiencing any migration, forced migration, and migration resulting in family separation were highly dependent on place of residence. Almost universally, Cambodians living in urban areas at the start of the Khmer Rouge period were forced to move.

Summarizing demographic events experienced during the Khmer Rouge period

Table 5 summarizes demographic events experienced during the Khmer Rouge period for a sample of individuals that excludes proxy respondents, those never married, and those living in other countries at the start of the period. The table highlights the likelihood that today's older adults were affected in ways that could have long-term consequences for support. For instance, 43 percent lost a child during the period, 29 percent experienced a child death due to violence, 28 percent lost a child aged 11 and older, and 22 percent lost two or more children. Death of a spouse and forced migration were also common experiences. The table shows the frequency with which individuals experienced combinations of events. Nine percent expe-

TABLE 5 Percent reporting selected demographic events experienced during the Khmer Rouge period, 1975–79, by sex and place of residence at the start of the period, Survey of the Elderly in Cambodia, 2004

Event	Both sexes (N=1,219)	Men (N=449)	Women (N=770)	Lived in urban area (N=256)	Lived in rural area (N=963)
Death of at least one child	43.4	37.3	47.6	48.8	42.7 [#]
Death of at least one child aged 11+	27.5	19.6	33.0	31.5	27.0 [#]
Death of at least one child due to violence	29.0	22.6	33.5	36.4	28.2
Death of two or more children	22.3	17.2	25.9	27.7	21.7 [#]
Death of a spouse	16.0	5.6	23.2	33.1	13.9
Death of a spouse due to violence	10.2	1.8	16.0	23.8	8.7
Death of a spouse + death of at least one child	8.5	1.8	13.0	19.2	7.1
Forced migration	63.8	57.8	67.9	96.9	59.9
Forced migration + death of a child	29.0	21.2	34.3	47.7	26.7
Forced migration + death of a spouse	12.2	4.4	17.5	33.1	9.7
Forced migration + death of at least one child + death of a spouse	6.8	1.2	10.6	19.2	5.3
Did not experience death of child or spouse, or forced migration	19.6	25.5	15.6	2.3	21.7

NOTES: Proxy respondents, those never married, and those living in other countries at the start of the Khmer Rouge period are omitted (N=54). Urban residents include 224 living in Phnom Penh and 32 living in other urban centers. Differences in the distributions between men and women are statistically significant ($p < .05$) in all cases. Differences in the distributions between urban and rural residence are statistically significant ($p < .05$) in all cases except where indicated by #.

rienced the death of at least one child and a spouse during the period, and 7 percent experienced these two events and were forced to migrate. Only about 20 percent did not experience any of these events, indicating that immediate demographic impacts of the war were widespread.

Surviving women were more likely to experience adverse events than surviving men. For instance, the percent experiencing the death of two or more children under the Khmer Rouge was 17 percent for men and 26 percent for women, and the percent experiencing the death of at least one child and a spouse is 2 percent for men and 13 percent for women. Part of the sex difference in experiencing death is due to a female advantage with respect to survival. In this case, it is more than a natural biological advantage since men had a much higher probability of dying from violent causes during the Khmer Rouge period. In addition, those living in urban areas at the start of the period were more likely to have experienced a number of these events. While 22 percent of those in rural areas reported not experiencing any events, the same was true of only 2 percent of those in urban areas.

Long-term impacts

Death of children and current family size

We now examine how the mortality of children and spouses during the Khmer Rouge period affects current family structure, living arrangements, material support, and economic well-being among elderly surviving Cambodians. We first examine associations between the death of one or more children during the period and the number of children currently alive. Logically, we would expect the death of children to result in smaller families today than otherwise would be the case, hence that these deaths would have implications for the availability of support. It is possible, however, that some losses could be compensated for with increased fertility after the Khmer Rouge period.

The average number of children alive today for the entire sample is about 4.5, and this number varies little across the experience of children dying. Those with no children dying have 4.7 alive today, versus 4.9 for those who had one child die and 4.2 for those who had two or more children die. However, Figure 1, which presents mean number of children currently alive according to the number of children who were alive during the Khmer Rouge period, suggests that losses do have some impact on current family size.³ For example, those who experienced no deaths and had two children alive during the period have an average of 2.1 children today. In contrast, those who had two children alive during the period and experienced one or more child deaths have an average of 1.3 children alive today. For those who had eight or more children alive during the period, those not experiencing a death have 7.1

FIGURE 1 Mean number of children currently alive by death of children and number of children alive during the Khmer Rouge period, 1975–79, Survey of the Elderly in Cambodia, 2004 (N = 1,228)

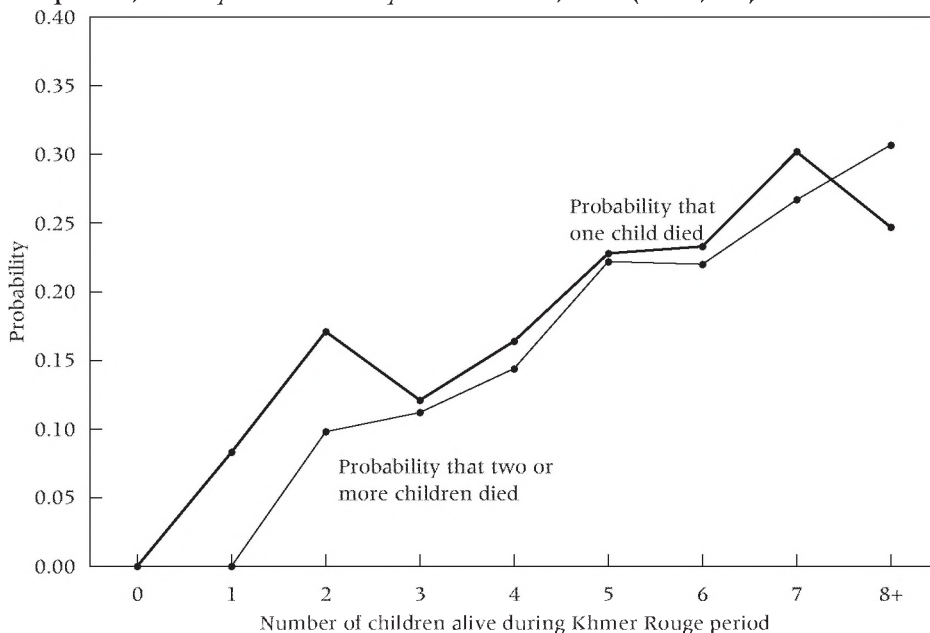


NOTES: Proxy respondents and those never married are omitted (N = 45). Number of children alive during the Khmer Rouge period determined by children ever born before 1979 and alive at any time between 1975 and 1978. Number of cases by number of children alive during Khmer Rouge are: 0 = 32; 1 = 75; 2 = 110; 3 = 132; 4 = 148; 5 = 172; 6 = 153; 7 = 146; 8+ = 260. Number of cases by death of children are: no deaths = 681; one death = 253; two or more deaths = 294. F-value significance tests for differences in mean number of children across deaths indicate all comparisons are significant except for those with 1 and 2 children alive during the Khmer Rouge period.

children today, those experiencing one child death have 6.3, and those losing multiple children have 5.7 children alive today. Depending on the number of children alive during the Khmer Rouge period, those who experienced one child death have between 0.1 and 1.1 fewer children alive today than those who experienced no deaths, while those with multiple child deaths have between 0.6 and 2.8 fewer children today. Thus, for the current sample, losses of children during the Khmer Rouge period were not subsequently compensated for with increased fertility. This may not be surprising since this sample, which is aged 60 and older in 2004, would have been aged 35 and older at the end of the Khmer Rouge period in 1979. Other research has suggested that an increase in fertility occurred among younger-aged adults following the Khmer Rouge period (Heuveline and Poch 2005).

The reason that the effect of child deaths on current family size is minimal before controls for number of children alive during the Khmer Rouge period is suggested by Figure 2. The overall probabilities of losing one or mul-

FIGURE 2 Probability of the death of one or more children during the Khmer Rouge period, 1975–79, by number of children alive during the period, Survey of the Elderly in Cambodia, 2004 (N = 1,228)



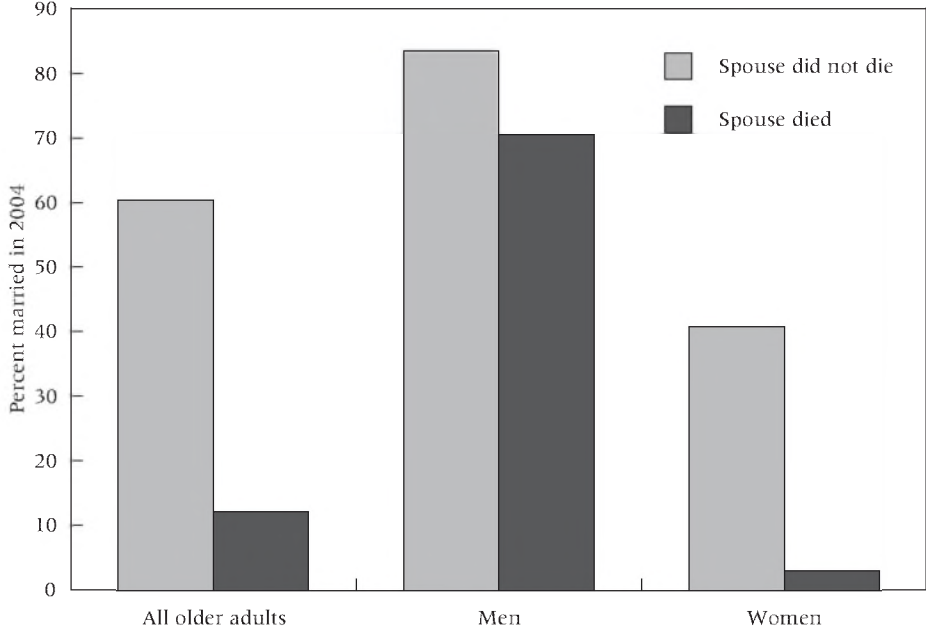
NOTES: See notes to Figure 1.

multiple children during the period are .211 and .223 respectively. The figure segregates these probabilities by number of children alive during the Khmer Rouge period and indicates a strong association between this number and the chances of experiencing child deaths. For instance, the probabilities of losing one child and more than one child among those with two children alive during the Khmer Rouge period were .171 and .098 respectively, compared to .247 and .307 for those with eight or more children. Hence, those with more children during the Khmer Rouge period were more likely to experience child losses, but they are also likely to have a larger number of children still alive today. Because those with few children were less likely to lose any, losses under the Khmer Rouge did not result in many surviving elderly Cambodians being childless. Indeed, only 4.5 percent (N=55) of the sample have no living children today, and of these childless individuals only about one-third (N=17) report child deaths during the Khmer Rouge period. Thus, deaths during the Khmer Rouge period are not in large part responsible for childlessness among today's elderly in Cambodia.

Death of a spouse and current marital status

Figure 3 shows current marital status by whether or not an older adult experienced the death of a spouse during the Khmer Rouge period and pro-

FIGURE 3 Percent of Cambodians aged 60 and older reported as married, by sex, according to whether or not their spouse died during the Khmer Rouge period, 1975–79, Survey of the Elderly in Cambodia, 2004 (N = 1,228)



NOTES: Proxy respondents and those never married are omitted (N = 45). Probability of being currently married is statistically significant for those with and without a spouse death for all older adults and for women at $p < .01$, and for men at $p < .10$.

vides evidence of the probability of remarriage. While about 60 percent of those who did not lose a spouse during the period are currently married, the same is true for only about 12 percent of those who did experience a spouse’s death. Therefore, remarriage overall is infrequent. However, there is a very sharp difference according to sex. Whereas about 70 percent of men who experienced a wife’s death are currently married, the same is true of only 3 percent of women who experienced a husband’s death. The probability that a man is currently married is only moderately related to the death of a wife during the Khmer Rouge period, while the probability that a woman is married is highly dependent on whether or not she experienced the death of a husband during the Khmer Rouge period. Therefore, the loss of support that may be a consequence of a spouse’s death under the Khmer Rouge is almost exclusively a concern for women.

Impact of events on living arrangements, material support, and economic well-being

We now examine associations between the death of one or more children and a spouse and indicators of the welfare of older adults. The question is

whether those who experienced these events are currently less likely to live with others and with children, are less likely to receive material support from children, and are less likely to have favorable levels of economic well-being. For comparative purposes, we measure each of the outcomes dichotomously as 0 and 1, with 1 representing what would be expected given more favorable conditions of welfare among the elderly. Unfavorable impacts are thus indicated by negative associations between deaths to children and spouse and the various outcomes. The living arrangement indicators are whether the respondent lives with at least one other person and whether the respondent coresides with a child. The support indicators are whether the older adult reports that at least one child currently provides support for the household in which he or she lives; whether at least one child has provided any money or other material goods in the last year; and whether at least one child has provided a substantial amount of money or other material goods. The last measure considers money or other material goods with a value of at least 100,000 Riels (about US\$25).⁴

We consider two indicators of economic well-being. The first measures self-assessed economic well-being, combining three survey items: (1) a five-point scale of current economic status relative to others in the community; (2) a four-point scale of adequacy of current income in meeting expenses; and (3) a five-point scale of satisfaction with one's current economic situation. We add the scores on the three items such that the higher the sum, the greater the self-assessed well-being. For our analysis, we dichotomize the index into whether or not a person falls approximately into the highest quartile on the resultant index. Such individuals would be those who stated their economic status as average or better, indicated they had just enough or more than enough money for expenses, and reported fair or better satisfaction with their income.

The second indicator of economic well-being is a household wealth index reflecting the quality of housing and household possessions. The items incorporated in the index are the type of toilet, type of flooring, type of roof, and presence or absence of electricity, television or radio, telephone, refrigerator, car or motorcycle, fan or air conditioner, and jewelry. These items were combined into a single index using principal component analysis to derive weights (Filmer and Pritchett 2001). The index scores were then ranked from 0 to 100 based on percentiles. Most elderly Cambodians in our sample have modest levels of household possessions and live in poor-quality housing. For instance, less than half report having electricity, and less than a third have jewelry or a car/motorcycle. Thus, we define favorable wealth status as being in the highest quartile. Even for many in the highest quartile, however, the absolute living standard is quite modest.⁵

Table 6 presents unadjusted results. The first column is the percent of the total sample who report favorable outcomes across the living arrangement, support, and economic well-being indicators. Subsequent columns show

TABLE 6 Indicators of living arrangements, support, and economic well-being, by death of children and spouse during the Khmer Rouge period, 1975–79 (N = 1,219), Survey of the Elderly in Cambodia, 2004

Percent ...	Total sample	Death of one child	Death of two or more children	Death of spouse
living with others	96.7	96.2	93.8***	93.4**
coresiding with a child	79.9	79.3	76.2*	80.0
whose household receives support from a child	87.7	89.5*	87.2	87.7
receiving money or goods from a child	92.8	93.8	91.6*	89.8*
receiving substantial money or goods from a child	25.3	27.3	26.3	30.8*
with favorable self-assessed economic well-being	25.5	23.5	23.7	29.1
with favorable household wealth	25.0	26.0	26.0	35.2***

***p < .01; **p < .05; *p < .10

NOTES: Proxy respondents, people never married, and those living in other countries at the start of the Khmer Rouge period are omitted (N=54). In addition, associations with death of a child, and two or more children include only those at risk of experiencing the event (i.e., those who had at least one child living during the Khmer Rouge period). Significance tests are based on chi-square values and compare event occurring versus not occurring among those at risk.

the percent who report favorable outcomes among those who experienced the death of one child, the death of two or more children, and the death of a spouse. Overall, older Cambodians are very likely to live with others, live with children, live in a household that receives support from children, and receive money or goods from children. They are far less likely to receive substantial money or goods. Given how we constructed indicators of economic well-being, one-fourth of the sample has favorable levels for each measure.

Deaths of children and one's spouse do not appear to exert a substantial influence on these outcomes, and in some instances the association is in the direction opposite to what was expected. However, it is necessary to examine these associations further using a multivariate approach. As already noted, even with losses during the Khmer Rouge period, many Cambodians still have large families and almost all have some living children, thus making filial support possible. We showed earlier that the chances of experiencing the death of one or more children are related to family size at the time of the Khmer Rouge regime. Therefore, without adjusting these percents for family size during that period, we cannot conclude the lack of an impact. In addition, other factors might obscure the causal nature of the associations, including age, sex, rural/urban residence, and education. Because the chances of being directly affected by the war were closely related to residence and education, the latter two factors may be of particular importance. While this means that fewer children and spouses of urbanites and the highly educated survived, education and higher socioeconomic status may have been an asset in the aftermath of the Pol Pot regime, and these individuals

may have been better able to cope than other Cambodians. It is possible, then, that urbanites and the higher educated suffered fewer long-term consequences as a result of the Khmer Rouge period.

Table 7 displays results from logistic regressions predicting the probability of the same outcomes shown in Table 6 after controlling for age, sex, current place of residence (rural non-Phnom Penh, rural Phnom Penh, or urban), education (having or not having formal education) and number of children alive during the Khmer Rouge period. The results represent adjusted predicted probabilities and changes in these probabilities that arise if an individual experienced a particular event. They are determined as follows: 1) We ran two logistic regressions for each outcome measure. The first equation distinguishes those who experienced no, one, and more than one child death; the second distinguishes those who experienced the death of a spouse from those who did not. 2) We used the results of the logistic regressions to determine a set of mean predicted probabilities. First, overall predicted sample probabilities are derived from equations that omit the event but include the control variables. Second, probabilities are derived for those experiencing the death of a child, the death of multiple children, and the death of a spouse. 3) We define the difference between the overall sample probability and the probability for those experiencing events as the effect. For instance, the overall predicted sample probability for living with others is .970. The probability for

TABLE 7 Effect of selected events occurring during the Khmer Rouge period, 1975–79, on predicted mean probabilities of indicators of living arrangements, intergenerational exchanges, and economic well-being (N = 1,219), Survey of the Elderly in Cambodia, 2004

Indicator	Overall predicted sample probability	Change in the predicted probability for those experiencing		
		Death of one child	Death of two or more children	Death of spouse
Living with others	.970	+016	-.029**	-.016*
Coresiding with a child	.815	+021	-.049**	-.009
Household receiving support from a child	.867	+026	-.061**	+015
Receiving money or goods from a child	.910	+006	-.119***	-.002
Receiving substantial money or goods from a child	.291	+022	-.031	+026
With favorable self-assessed economic well-being	.289	-.024	-.038	+004
With favorable household wealth	.379	+018	-.027	-.011

***p < .01; **p < .05; *p < .10

NOTES: Overall predicted sample probability controls for age, sex, rural/urban residence, and number of children alive during the Khmer Rouge period. Proxy respondents, people never married, and those living in other countries at the start of the Khmer Rouge period are omitted (N=54).

those who experienced multiple child deaths is .941. Therefore, multiple child deaths reduce the probability by .029, and this is the effect of this event on the probability of living with others. Table 7 presents the overall predicted sample probabilities and the effects on change in the probabilities for those experiencing particular events. Significance levels indicate which of the events resulted in significant changes in predicted probabilities.

Several findings are of interest. First, deaths of multiple children and a spouse significantly reduce the probability of living with others and therefore increase the probability of living alone. The death of multiple children is particularly consequential since it nearly doubles the probability of living alone compared with not experiencing the death of multiple children. Second, outside of living with others, the death of one child and the death of a spouse do not significantly influence the current welfare of older adults as measured by living arrangements, support, and economic well-being, and the changes in the probabilities for those experiencing these events is minimal and therefore inconsequential. Third, and in contrast to the last point, the death of multiple children is significant in some instances, decreasing the probability of living with a child, receiving household support, and receiving money or goods from children. The effect of the loss of multiple children on predicted probabilities is often many times greater (and often in the opposite direction) than the effect of the death of one child and a spouse. However, we also find that death to multiple children does not significantly influence current economic well-being measured according to self-assessments and household wealth. Fourth, despite the significant effects of the death of multiple children, most older adults, regardless of their experiences, are still likely to coreside with others and with children and to receive some exchanges from children. But the chances of receiving substantial amounts of exchanges in money and goods are quite low. Moreover, as noted above, the living standard of most elderly Cambodians is poor, even among those in what we have defined as the favorable category.⁶ In sum, the death of two or more children has a significant impact on current welfare, but net effects, as measured by predicted probabilities, are generally modest.

Conclusion

Older adults in contemporary Cambodia are survivors of a violent and disruptive history that includes periods of civil war and occupation by neighboring Vietnam. The Pol Pot–led Khmer Rouge period, from 1975 to 1979, resulted in substantial excess mortality, forced migration, and family separation. Mortality resulting from disease and famine was also common, and many fled the country to refugee camps set up across the border with Thailand.

Today, Cambodia is emerging from a long period of isolation from most of the rest of the world, and only recently have data to examine social, economic, and demographic conditions within the country, including its

older population, become available. In this article we analyze results from a sample survey of adults over age 60, conducted in 2004. We demonstrate that the demographic influences of the Khmer Rouge period on today's older adults are widespread. The death of children and spouses, forced migration, and separation of families were common and were more likely to be experienced during 1975–79 than before or after. For example, 43 percent of our sample reported experiencing a child death during the four-year Khmer Rouge period compared with about 7 percent during the next four years.⁷ Twenty-nine percent reported the death of at least one child from violent causes during the Khmer Rouge years, and 97 percent of those living in urban areas at the start of the regime reported being forced to migrate.

Although our analysis provides evidence of long-term impacts of past events, we conclude that the net long-term effects with respect to living arrangements, support, and economic well-being are modest and at times ambiguous. We do find, however, that surviving women are likely to have experienced the death of a spouse during the period, and those who did were much less likely to remarry than were men in the same circumstances. Older adults are much more likely to have experienced the death of a son than a daughter. These two findings help explain previous reports of a substantial number of widowed women living with widowed daughters in Cambodia (Zimmer and Kim 2001).

When controlling for the number of children alive during the Khmer Rouge period, experiencing the death of a child results in somewhat smaller family sizes today. But those with large families during the Khmer Rouge period were more likely than those with small families to experience the death of a child. Consequently, only 2 percent of those experiencing the death of one child and 4 percent of those experiencing the death of two or more were childless at the time of the survey. Interestingly, 7 percent of those not experiencing a child death were childless at the time of the survey.

We framed our study in the context of two alternative hypotheses. The first encompassed the notion that reductions in family size should lead to diminishing support from younger family members. The second held that normative behavior, persistent high fertility, and pervasive poverty would moderate or largely eliminate the impact that the death of children and spouses has on current living arrangements, support, and economic well-being. Our findings are more consistent with this second hypothesis. On the one hand, the death of multiple children, although not the death of a single child and generally not the death of a spouse, decreases the probability of living with others, living with children, and receiving support. On the other hand, even the death of two or more children during the Khmer Rouge period generally does not leave older adults at high risk of living alone or living without some degree of support. For example, among those losing multiple children, 94 percent still live with others, 76 percent live with a

child, 87 percent live in households that receive support from a child, and 92 percent receive at least some money and goods from a child. So, despite substantial loss of children under the Khmer Rouge regime and its aftermath, the majority of older Cambodians have some potential filial support available.

One significant limitation of the current study, as with any survey of a postwar population, is that selection effects are necessarily at work, and some of these might provide alternative explanations to certain findings. First, accounts of mortality during the Khmer Rouge period suggest that in many cases entire families were killed, while in many other instances couples died leaving orphaned children (Kiernan 1996). In these cases elderly surviving family members were not available for our survey. Second, older adults who survived the period but were most severely affected may have died some time between the end of conflict and 2004. Third, those who survived may be a more robust group as well as a group that had more resources available to them prior to the war. A number of accounts of the war in Cambodia suggest that those economically better off were able to purchase food and other items necessary for survival, while others with lesser means may not have survived (Kiernan 1996; Ung 2000).

Some significant long-term influences on living arrangements and support are evident among Cambodians who experienced the death of multiple children, but the net effect on the surviving cohort is modest. To understand why this is so, it is critical to consider the context of close family integration, high fertility before and immediately after the war, and pervasive poverty that generally characterizes the elderly population in Cambodia today. Given the pervasive poverty, the widespread effect of the war on the total population, the fact that older populations in developing societies remain supported even when they have few surviving family members, and perhaps selection factors that determine who survived, the impacts of different individual experiences are less noticeable than might have been anticipated.

Notes

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1 Studies of the indirect consequences of war have examined the short- and medium-term impacts of traumatic experiences on psychological outcomes, such as post-traumatic stress disorder, depression, and anxiety (Babic-Banaszak et al. 2002; Butera, Bultinck, and

Mercier 1999; Farhood et al. 1993; Mollica et al. 1993; Momartin et al. 2003). Recent attention has also been given to the impact of war on health infrastructures (Cliff and Noor-mahomed 1993; Ityavyar and Ogba 1989; Murray et al. 2002), fertility outcomes (Agadjanian and Prata 2002; Blanc 2004), marriage (Laliberté, Laplante, and Piché 2003), and disability (Ghobarah, Huth, and Russett 2004).

2 For the population overall, the 2000 Demographic and Health Survey reports that 91.3 percent of women aged 15 and older are married, and that the median first age at mar-

riage for women is 20.0 (National Institute of Statistics, Directorate General for Health and ORC Macro 2000).

3 By number of children alive during the Khmer Rouge period, we mean the number of children who were alive at the beginning of the period in 1975 plus the number who were born before the end of the period in 1979. This is the total number of children who would have been alive and at risk of dying during the period 1975–79.

4 According to the 1999 Socioeconomic Survey conducted by the Ministry of Planning, the average monthly household income in Cambodia was just over 400,000 Riels, or about US\$100.

5 In addition to testing effects on economic well-being indicators measured dichotomously, we conducted OLS regressions with the economic well-being indicators measured on a continuous scale. The associations remain in the same direction. But negative relationships between the death of two or more children and both indicators of well-being become significant ($p < .05$).

6 We ran several additional equations to test for the robustness of our results. Results based on equations without controlling for number of children alive during the Khmer Rouge period were not as strong, particularly with respect to the outcome of a child giving any money or goods. However, the effects of the death of multiple children, where previously significant, remained so. We conclude that the number of children alive during the Khmer Rouge period suppresses the effect of deaths on the various outcomes. Separate equations for the influence of a spouse's death by sex yielded results for women that were

nearly identical with those reported here, while results for men were unstable owing to the small number of men who experienced the death of a spouse under the Khmer Rouge.

Several significant relationships of control variables are evident. Increasing age decreases the probability of living with others. Being female decreases the probability of living with others or with children and increases the probability of receiving substantial income or goods and the probability of having favorable household wealth. Number of children alive during the Khmer Rouge period increases the probability of living with others, living with children, having a child support the household, receiving money and goods from a child, and receiving substantial money and goods from a child. Living in a rural area (versus living in urban Phnom Penh) decreases the probability of living with others, living with children, receiving substantial money and goods from children, having favorable self-assessed well-being, and having favorable household wealth. Living in rural sections of Phnom Penh province (versus living in urban Phnom Penh) reduces the probability of receiving substantial money and goods from children and having favorable household wealth. Those with education are more likely to be receiving substantial money or goods from a child and are more likely to report favorable household wealth.

7 All but a small number (i.e., those childless) were at risk of experiencing a child death during these periods. Eliminating those who were childless during these periods increases experiencing a child death to 46 percent during the Khmer Rouge period, while the percent experiencing a child death in the following four years remains at 7 percent.

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