# New Light on Cambodia's Darkest Years:

# A Reappraisal of the Khmer-Rouge Death Toll

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**Extended Abstract**

**September 21, 2009**

**Submitted for Presentation at the 2010 Annual Meeting**

**of the Population Association of America**

Extant estimates vary considerably with respect to the number of deaths that resulted from the "3 years, 8 months, and 20 days" of the Khmer-Rouge ruling of Cambodia. The regime's death toll consists not only of the number of persons killed by Khmer-Rouge cadres but rather of the total number of deaths in excess of what this total would have been under *normal* circumstances—that is, circumstances as they can be extrapolated from prevailing mortality conditions before the Khmer-Rouge take over. Thus defined, the death toll also includes numerous deaths from exhaustion, starvation, and even diseases that were more easily prevented and treated before the complete overhaul of Cambodia's political, administrative and social structures and the destruction of much of its infrastructure.

Estimates of the death toll range from half a million to over three million excess deaths—a huge range considering that the country's total population size stood close to 8 million only at the outset of the Khmer-Rouge regime. Heuveline (1998a) classified extant estimates into two sets based on their respective methodologies. Used mostly by historians shortly after the regime's collapse, the sample approach provided the first set. Investigators would interview a sample of survivors and ask them about the survivorship of close relatives: parents, children, or full siblings. The proportion of survivors among those kin would then be extrapolated to the entire population, sometimes by strata expected to have been exposed to different degrees of violence under the Khmer-Rouge regime (e.g., Kiernan 1996). The second set relied on a demographic approach. The death toll is there obtained as a residual in the counterfactual reconstruction of population change between the time of the Khmer-Rouge take over and the time of their fall under *normal* circumstances. This approach is similar to the demographic

estimation of international migration between two censuses, using census data to estimate actual population change and vital registration to estimate intercensal births and deaths.

This paper investigates the frustratingly large range of extant estimates and whether it can be refined with either new data or a new methodology. Since Heuveline's (1998a) review, much relevant data have emerged. In particular, a systematic excavation of mass graves was completed throughout Cambodia, seemingly providing for an alternative third approach through "direct" estimation. In fact, the gruesome body-count of 1,112,829 victims of execution (Etcheson 2005) is surprisingly close to the number predicted in Heuveline's (1998b) demographic reconstruction which yielded an estimate of 1.1 million violent deaths for the 1975-1979 years of Khmer-Rouge rule. This third approach has its limitations, however, including the uncertain degree of completeness of this mass-grave *census*, and the proportion of all excess deaths that those so uncovered represent. As for the sample approach, better sampling methodologies can be developed with time, as initially only small and possibly quite selected segments of the population are accessible to researchers (see, for instance, improvements to this approach in Sliwinski 1995). There are time limits on those gains though, as the bias linked to interviewing survivors and to recall errors are likely getting worse with the length of time elapsed since the period of interest.

Additional data are particularly welcome to refine the demographic approach. A new data source should generally allow the analyst to narrow the uncertainty range around a particular point estimate in the reconstruction. Drawbacks exist, however, when those additional data correspond to a date further away from the period of interest. A new census for instance may provide better data on contemporary demographics, but using these more recent data in the reconstruction requires a longer retro-projection period. With better and more recent data, the

characteristic projection fan representing the uncertainty surrounding the estimates might be narrower initially but wider for the period of interest.

In the case of Cambodia, the wealth of data that have become available in recent years, both on contemporary and on earlier demographic trends, is such that the benefits of incorporating them in the demographic reconstruction are quite likely to exceed the costs in terms of precision. This paper exploits three new sources of data: (1) The 1998 General Population Census of Cambodia (GPC 1998) is of better quality than the post-Khmer-Rouge total population figures used by prior analysts, such as the 1980 administrative count (e.g., Banister and Johnson 1993) or the 1993 United Nations electoral lists, which moreover was limited to population 18 years and older only (e.g., Heuveline 1998b); (2) The 2000 Cambodian Demographic and Health Survey (CDHS 2000) provides data for estimating recent fertility trends and comparing post-1970 mortality over different periods; (3) The Mekong Island Population Laboratory (MIPopLab) provides data on post-1960 fertility trends, albeit not in a nationally representative sample of the population, which allows for the separate estimation of (a) the size of the birth cohorts born during the Khmer-Rouge regime and (b) the number of excess deaths among those cohorts.

This paper will be the first to make full use of these new data opportunities for the purpose of refining extant estimates of the death toll, building on and consolidating recent scholarship on Cambodia. Neupert and Prum (2005) were the first to use the GPC 1998 data and fertility data from CDHS 2000 in their recent demographic reconstruction. De Walque (2005) has used mortality data from CDHS 2000 to compare the mortality of different groups, but recognized that these data are not suitable for estimating the total volume of Khmer-Rouge-era mortality. Heuveline and Poch (2007) have used both CDHS 2000 and MIPopLab data to

estimate fertility trends since the 1960s, but do not carry a full reconstruction of the national population.

The paper's second innovation is to explore the uncertainty of the estimation process. As mentioned at the outset, the range of extant estimates remains quite large and most researchers focus on providing a single *best* estimate of the death toll. Only Heuveline (1998b) provides a range of estimates, but his range pertains to the whole decade of the 1970s—whereas the period of Khmer-Rouge control is from April 1975 to January 1979—and the range is also quite large (1.17 to 3.42 million). While a wide range might indeed reveal the extent of our uncertainty regarding the death toll, the methodology used renders the range hard to interpret. Its lower and upper bounds are obtained by combining the lower or the upper bound of several demographic parameters in the reconstruction, and *in fine* the likelihood of such combinations is hardly quantifiable.

This paper develops a stochastic approach to provide such quantification. A likelihood distribution is first defined for each key parameter. A random drawing of a value is then simulated from each of these distributions and the drawn value used in a single reconstruction. Each set of draws (one value per parameter) thus yields a single estimate of the Khmer-Rouge death toll. Although this remains a relatively time-intensive process, 1,000 value sets will be drawn to generate a distribution of 1,000 death toll estimates. This distribution will allow for confidence intervals (C.I.) of varying degree (e.g., 95% C.I. or 90% C.I.).

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