

Family size and mortality during mass killings: A case study from the Guatemalan civil war

Diego Alburez-Gutierrez
PhD Candidate in Demography
London School of Economics
alburezg@lse.ac.uk

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Summary

Objective

To test relationship between social support and mortality **during** and **after** mass killings.

Research design

Mixed methods design: data come from genealogical reconstruction and are analysed using regression and survival models.

Findings

Family size affects survival probabilities in the context of mass killings. Short- and long-term causal mechanisms are discussed.

A. Background

Armed conflict mortality

- ▶ On the rise since end of WWII
- ▶ Affects mainly young men
 - ▶ 81% men and 58% between 15 and 34 (Obermeyer et al. 2008)
- ▶ Conflict affects combatants and non-combatants differently
- ▶ Most studies looked at effects on combatants

This study focuses on mass killings

What are mass killings?

Conflict-related violent events resulting in the death of at least five non-combatants (CEH 1999a)

Why study them?

- ▶ Massacre mortality differs from national excess mortality profile
- ▶ Less selective of young men
- ▶ Survivors of massacres are amongst the most vulnerable
- ▶ A contemporary phenomenon

Mass violence is not a thing of the past

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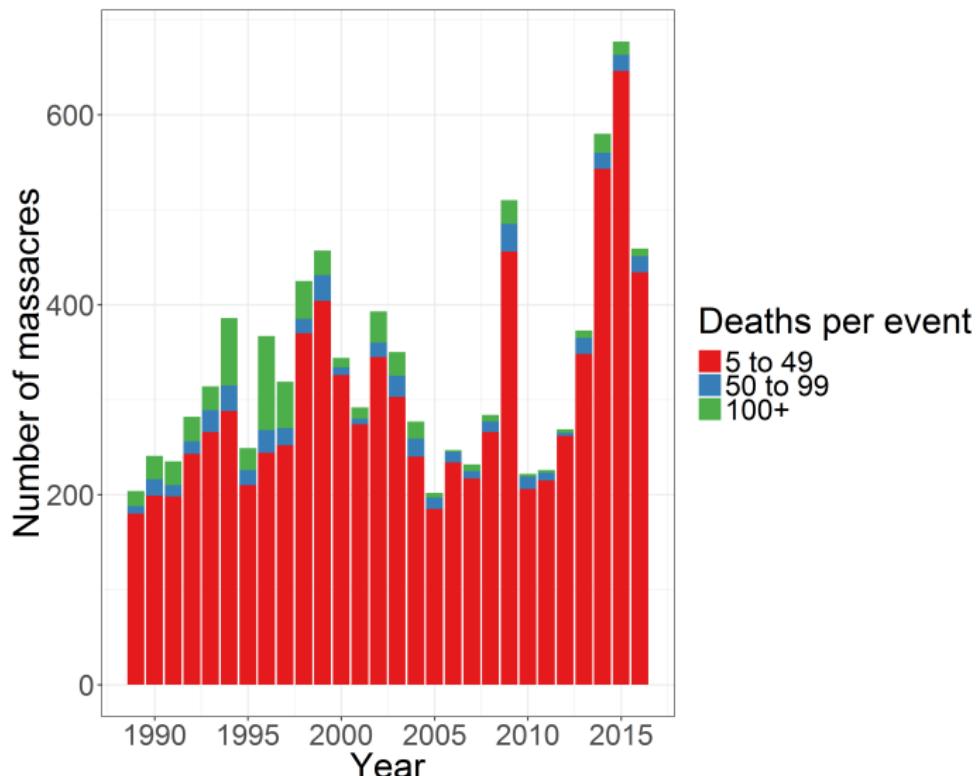


SCOTT NEUMAN



Source: <https://tinyurl.com/y9tgynmj>

Massacres of non-combatants over time



Source: Author with data from UCDP Georeferenced Event Dataset (version 17.2). ucdp.uu.se/downloads/

What makes individuals vulnerable during mortality crises?

- ▶ Conventional factors
 - ▶ Pre-crisis frailty (health) (Frankenberg et al. 2011)
 - ▶ Age (children under-5 especially) (Davis 2006)
 - ▶ Socioeconomic factors (Bundervoet 2009)
 - ▶ Urban/rural residence (de Walque and Filmer 2012)
- ▶ Family support (Warner 2007)
 - ▶ Relatives will provide support during crises
 - ▶ Age and gender roles matter (Ho et al. 2017)
 - ▶ Social support related to survival in non-emergency settings (Holt-Lunstad et al. 2010)

Family support and mortality during mass killings

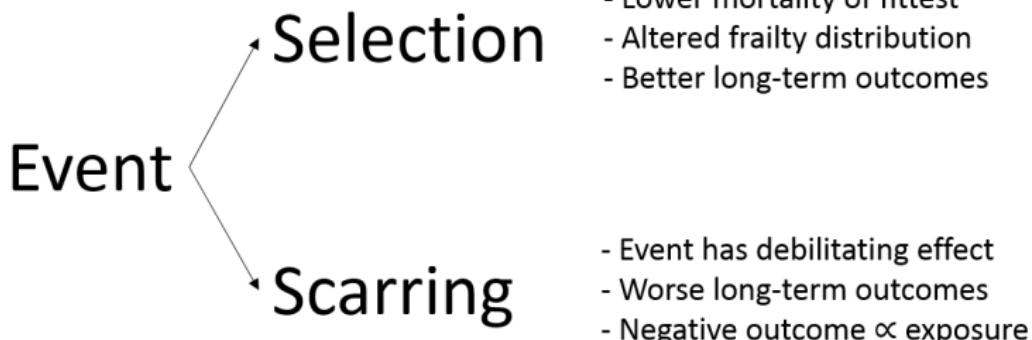
1. Damage prevention

- ▶ Measures to avoid exposure to the conflict
- ▶ Key role of spread of information

2. Damage control

- ▶ Actions taken to protect relatives
- ▶ Altruistic efforts to save own kin

Long-term mortality (after mass killings)



Family support and mortality after mass killings

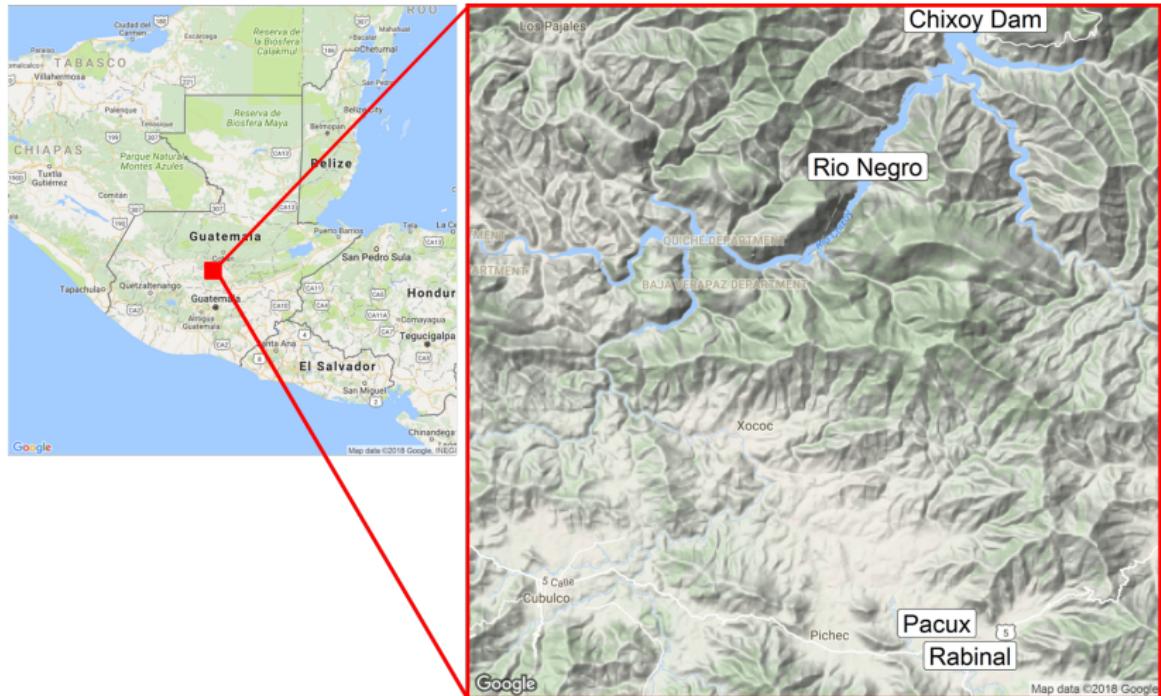
- ▶ Most studies focus on effects of psychological scarring
 - ▶ Link mental health & mortality in non-crisis (Ahmadi et al. 2011)
- ▶ Social scarring:
 - ▶ Loss of family support may affect long-term survival
- ▶ Evidence amongst Guatemalan Mayan refugee women:
 - ▶ Smaller kin networks linked to depression and trauma (Warner 2007)
 - ▶ Witnessing death of relative linked to PTSD (Sabin et al. 2003)

The case: Rio Negro and the genocide of the Maya-Achi

- ▶ Guatemalan civil war (1960-1996)
- ▶ Rio Negro, a Mayan community (\approx 1000 inhabitants)
- ▶ 44% population killed in mass killings in **1982**
- ▶ Construction of major hydroelectric power plant (Chixoy)



Rio Negro, (Rabinal, Baja Verapaz, Guatemala)



Research focus: mortality in context of mass killings

Research question 1

Did the availability of family networks affect survival probabilities during the mass killings of 1982 in Rio Negro?

Research question 2

Did the loss of family support increase the mortality risks after the mass killings (1983-2015)?

B. Research design

Research design summary

Mixed methods research design

1. Quantitative component

- ▶ Data: genealogical reconstruction
- ▶ Analysis: regression and survival analysis

2. Qualitative component

- ▶ Data: in-depth interviews and Focus Group Discussions
- ▶ Analysis: framework thematic analysis

Data on armed conflicts

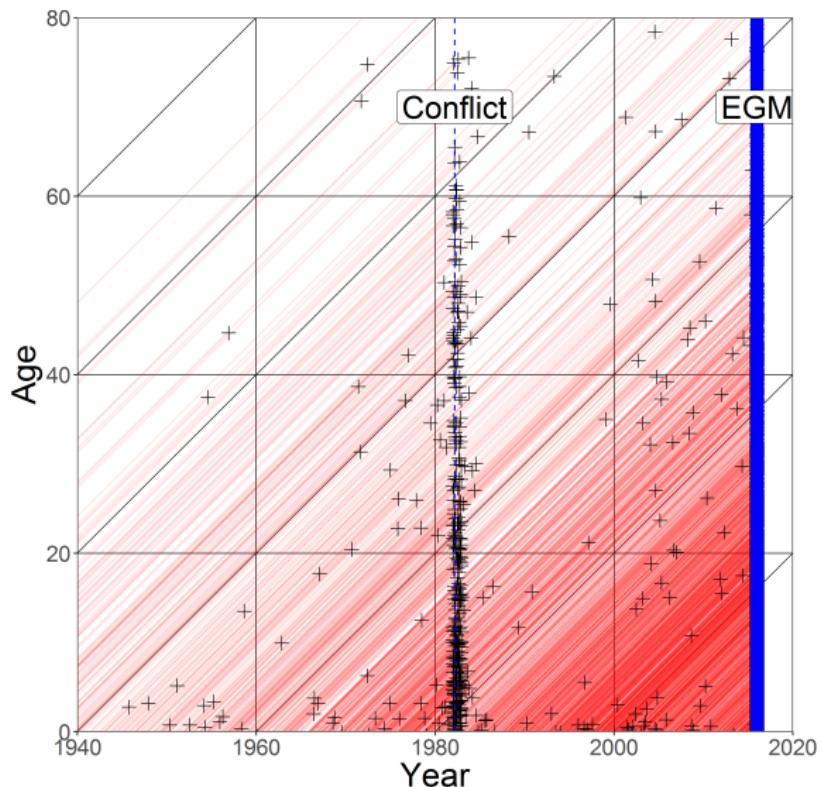
Data sources

- ▶ Censuses (Neupert and Prum 2005) and surveys (Bobak et al. 2002)
- ▶ Registration systems (Li and Wen 2005) and mortality databases (Gleditsch et al. 2002)

Limitations

- ▶ Aggregate (country-level) data
- ▶ Low quality (Hill 2004)
- ▶ Combatant/non-combatants distinction
- ▶ Hardly ever provide data to study social support

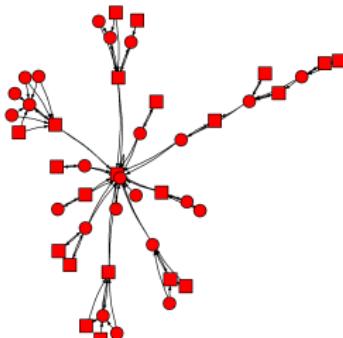
Survivor bias



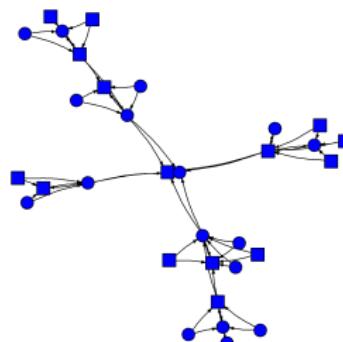
Data: Extended Genealogy Method

- ▶ Dataset using cross-checked genealogies of survivors
- ▶ Fieldwork Nov 2015 - Nov 2016
- ▶ Demographic data on one population (1950-2015)
 - ▶ **Complete** demographic history of 3556 individuals
 - ▶ Reconstructed from 100 family histories
 - ▶ Produce reliable data for demographic analysis

Family id: 37

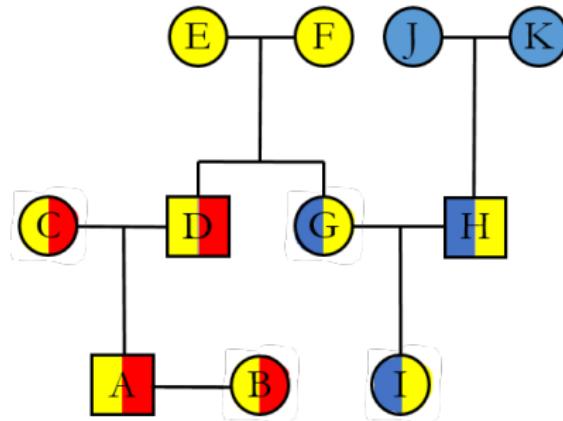


Family id: 74

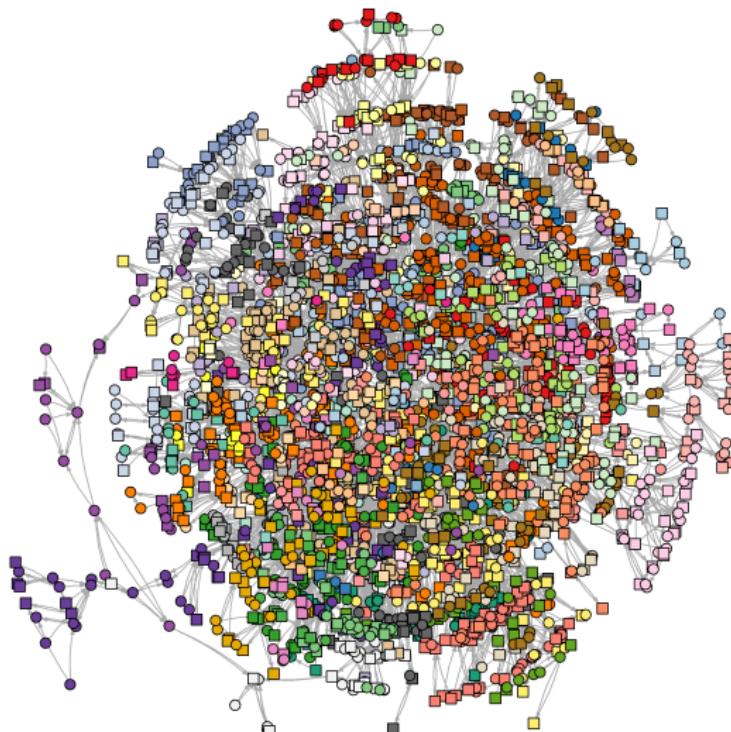


Sampling

- ▶ Non-probabilistic network sampling
- ▶ Participants selected iteratively
- ▶ Not necessary to sample every household
- ▶ Sample until 'genealogical saturation' is achieved

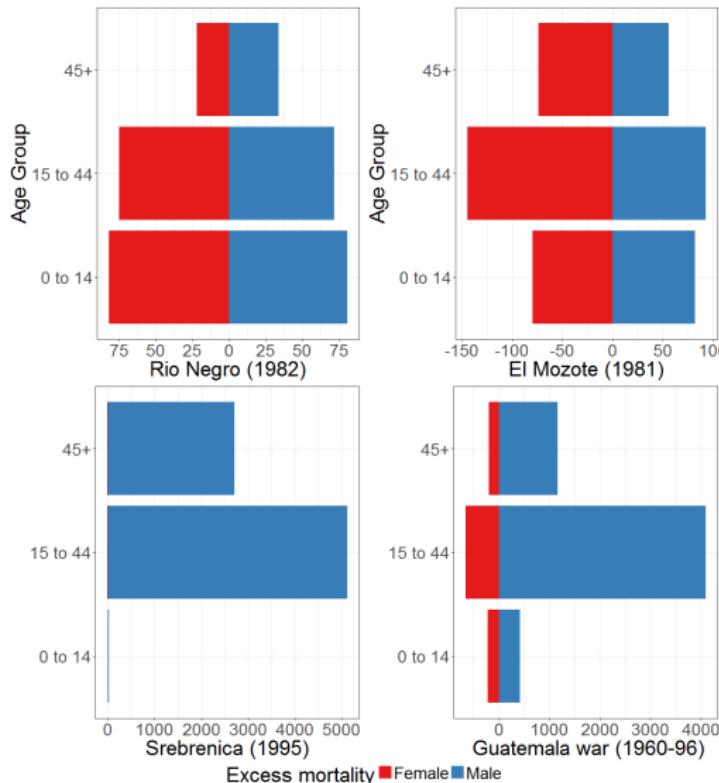


Rio Negro population 1950-2016: 3566 members



C. Surviving mass murder (RQ1)

Massacre excess mortality



Analysis: survival during massacres

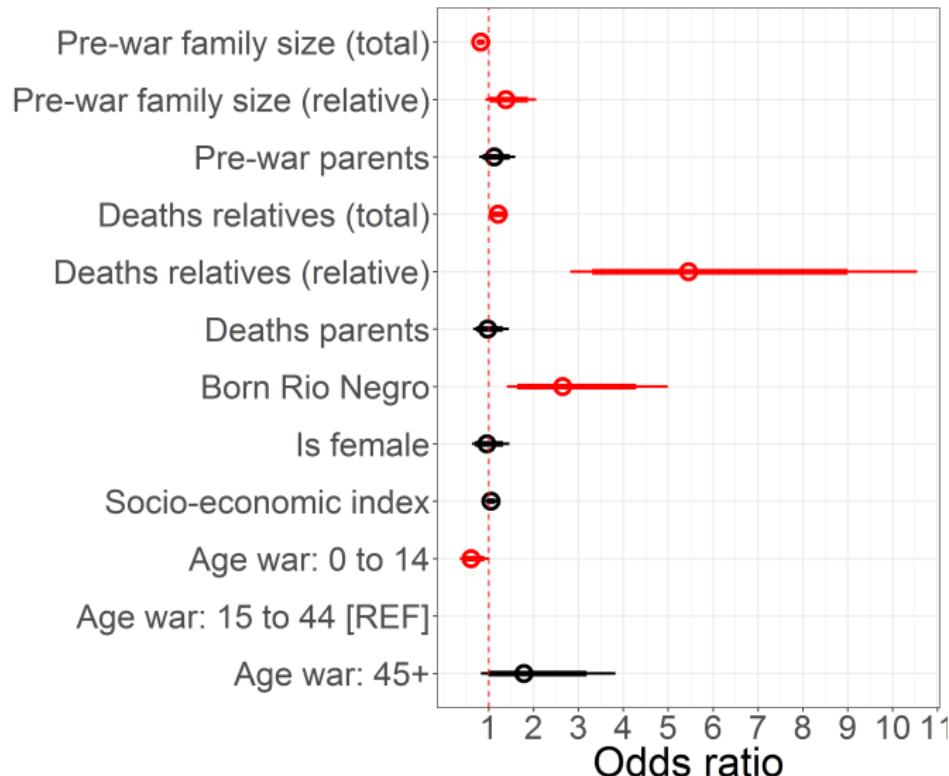
Binary logistic regression

- ▶ Population: All alive before the first massacres in 1982
- ▶ Outcome var.: Died in the massacres?
- ▶ Explanatory var.: Pre-killings family size
 - ▶ Total: absolute number of relatives
 - ▶ Relative: quartile of population distribution

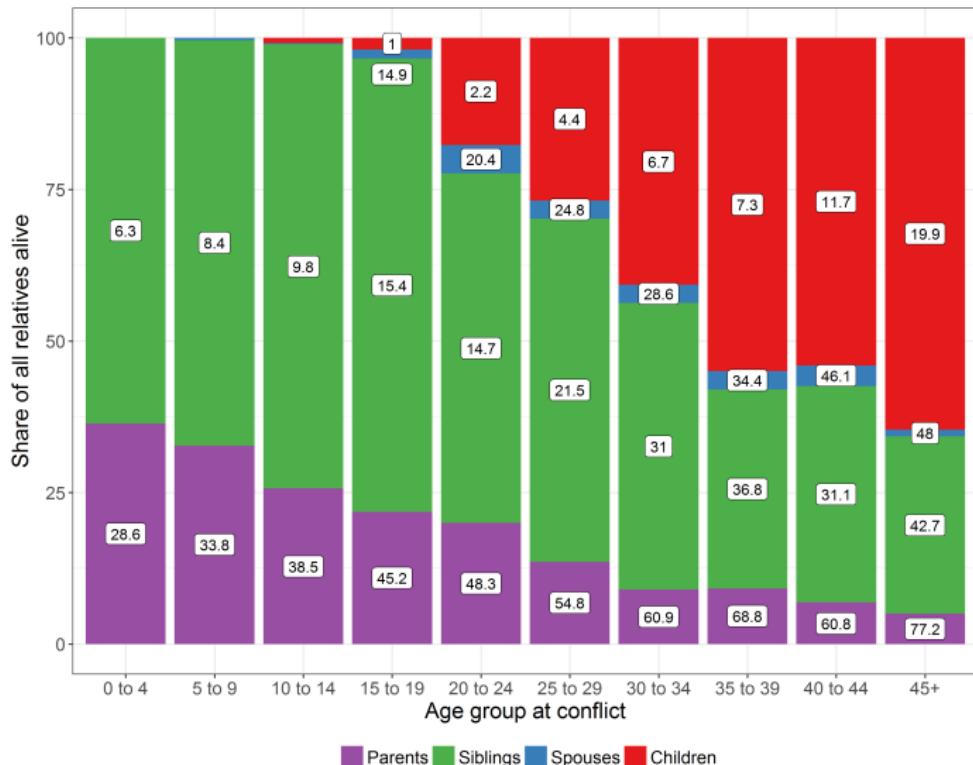
Other covariates

Prime-age adults (15-44) in family; Sex; Origin; Pre-killings socioeconomic index; Age at killings

Logit model (nuclear family): Died in the massacres?



Nuclear family composition in 1981



Mechanisms 1: Damage prevention

- ▶ Information spread through family networks
- ▶ Preventive measures: flee or hide
- ▶ Location of relatives mattered (locals 2.6x more likely to die)

Clara; female; age at killings: 23

Many were killed in Xococ. They were tortured. But at the time people in Rio Negro didn't believe it was true. It's all lies, they said, it's just a trick. But some of the survivors came back to their houses. They were crying and they told us the stories. We left for the hills but others stayed behind and were killed.

Mechanisms 2: Damage limitation

When the killings were imminent:

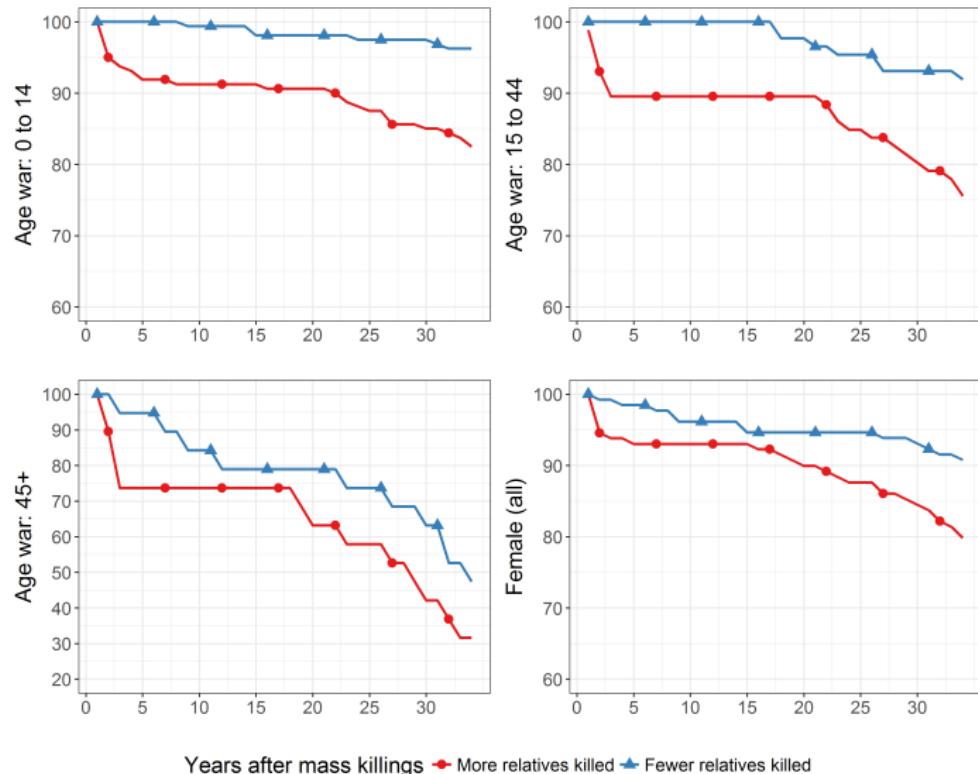
1. Attempts to conceal relatives or facilitate their escape
 - ▶ Qualitative evidence
2. Physically shielding relatives from violence
 - ▶ Strong association between own-mortality and mortality of relatives

D. Surviving after mass murder (RQ2)

Mortality of genocide survivors

- ▶ 604 individuals survived the 1982 mass killings
- ▶ 87 died between 1983 and 2015
- ▶ Most deaths within 5 years of the massacres
- ▶ Half of deaths were female

Relatives' mortality and own-survival (descriptive)



Analysis: survival after massacres

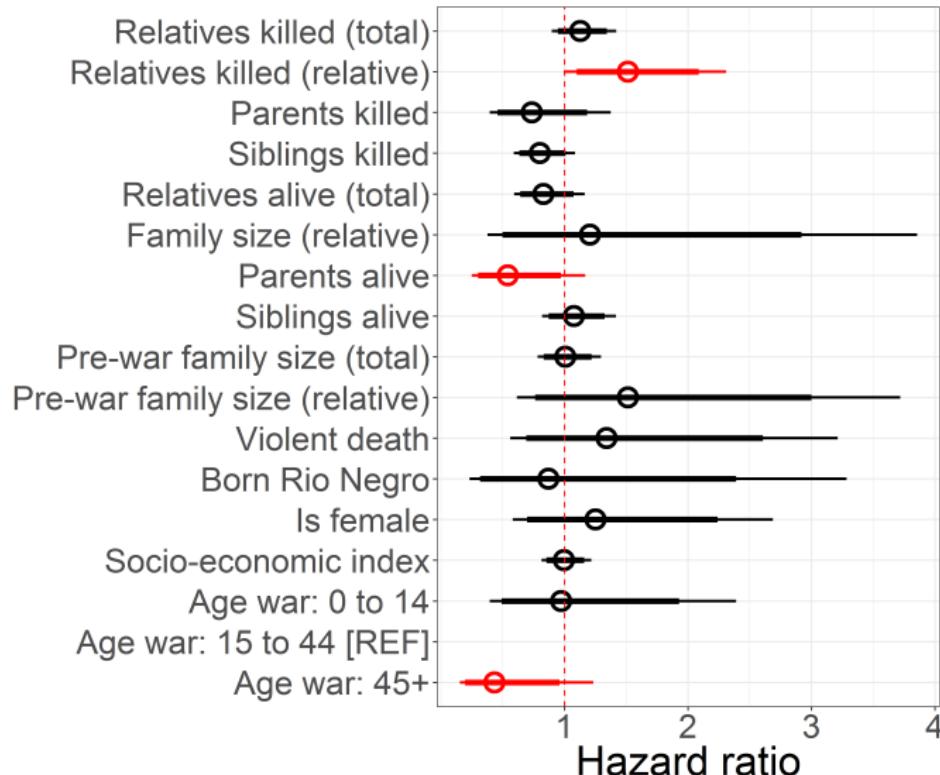
Cox proportional hazards model

- ▶ Population: Survivors of the killings
- ▶ Outcome var.: Years until death
- ▶ Explanatory var.: Mortality of relatives in massacres
 - ▶ Total: absolute number of family deaths
 - ▶ Relative: quartile of mortality distribution

Other covariates

Pre-conflict family size; Time-variant family size; Sex; Origin;
Pre-killings socioeconomic index; Age at killings

Cox model: Mortality after the killings



Mechanisms 1: Positive selection

- ▶ Stronger if highest conflict mortality amongst the frailest
- ▶ No pre-killings health data to evaluate
- ▶ However, massacres mortality was indiscriminate and non-selective

Estela, female; age at killings: 20

Everyone suffered the same during the violence, whether they were old or young, or women. We all went through the same thing. A child suffered the same as her grandparents if they were all killed. And when we fled to the mountains nobody had tortillas, money, clothes. Everything was gone. Our mothers and fathers were killed. But we were left behind and we hungered and there was no food.

Mechanisms 2: Social scarring

- ▶ Death of relatives led to loss of networks of support
- ▶ Family provided safety and sustenance
- ▶ Maximise family networks: highest marriage rate in record
- ▶ Reinforced gender roles and led to domestic violence

Pedro; male; age at killings: 33

After the violence people got together out of pure need. The widows had to find a husband whether they wanted to or not. They looked for a husband because how else would they have found the maize to eat and to make their tortillas? The men could go out to find the maize. But someone had to prepare it and serve it. You see, everybody had to find a partner at the time. There was no other way.

Mechanisms 2: Psychological scarring

- ▶ Survivors identified *b'is* as a form of sadness created by war
- ▶ Participants linked 'sadness' to mortality
 - ▶ "*She died from diabetes caused by b'is*"

Maria; female; age at killings: 25

*After the violence some people were overcome by sadness (*b'is*). They cried. Everything stuck in their heads and they became ill and died because they thought about it too much. Working the land had made them happy in the past but here everything is fenced. They could not go and plant their crops. They just had to stay at home doing nothing.*

E. Concluding remarks

Conclusions

1. Family size was related to lower mortality risks during the massacres
 - ▶ Prevent damage following spread of information
 - ▶ Physically protect relatives when death is imminent
2. Association between death of relatives and survival after killings
 - ▶ Selection effects maybe reduced, but no evidence
 - ▶ Social scarring: loss of social support
 - ▶ Psychological scarring: depression and trauma

Implications

- ▶ Measure social support to identify vulnerable population (refugee camps, host countries)
- ▶ Enforce existing obligations to facilitate reunification of families

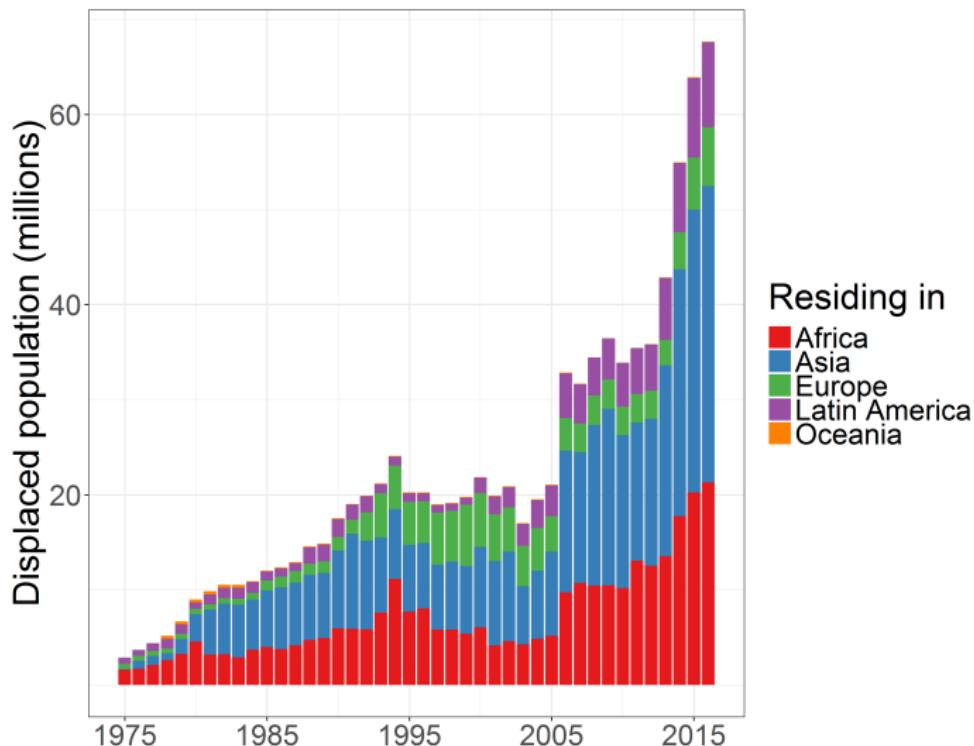
Take-home message

The availability of family networks may affect mortality risks during and after episodes of mass mortality.

Limitations

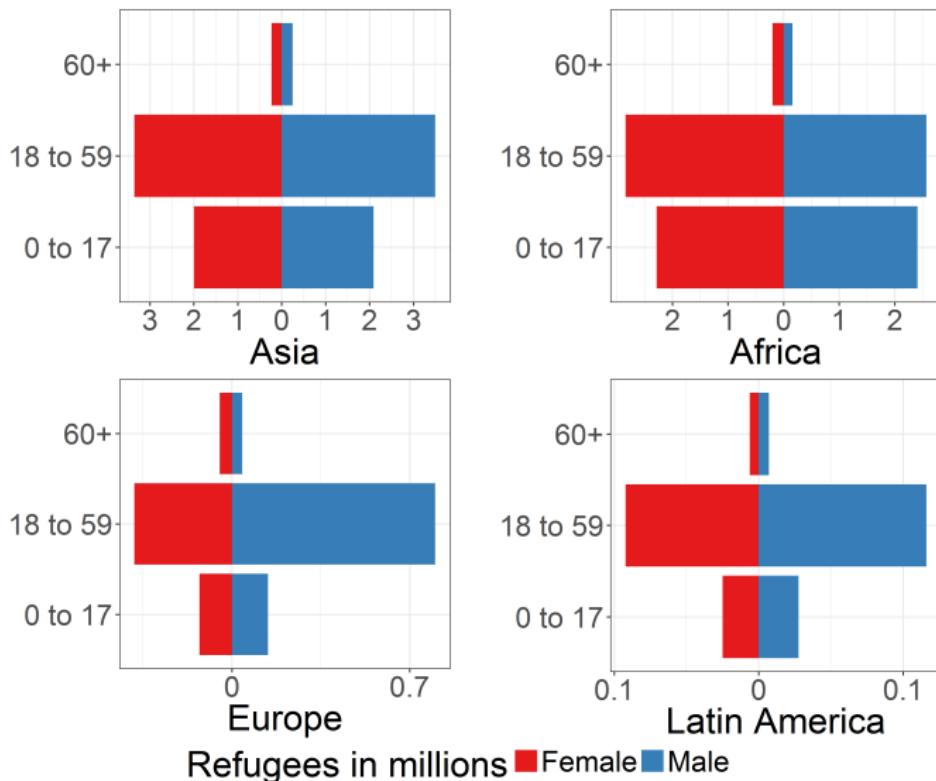
- ▶ Data
 - ▶ No frailty data (before or after killings)
 - ▶ Survival bias (cf. multiple reporting)
- ▶ Analysis
 - ▶ Limited statistical generalisability
 - ▶ No stratified analyses for specific relatives (e.g. spouses) given small sample size

Setting results in a global context



Source: Author with UNHCR data: http://popstats.unhcr.org/en/time_series

Who gets displaced?



Source: Author with UNHCR data: <http://popstats.unhcr.org/en/demographics>

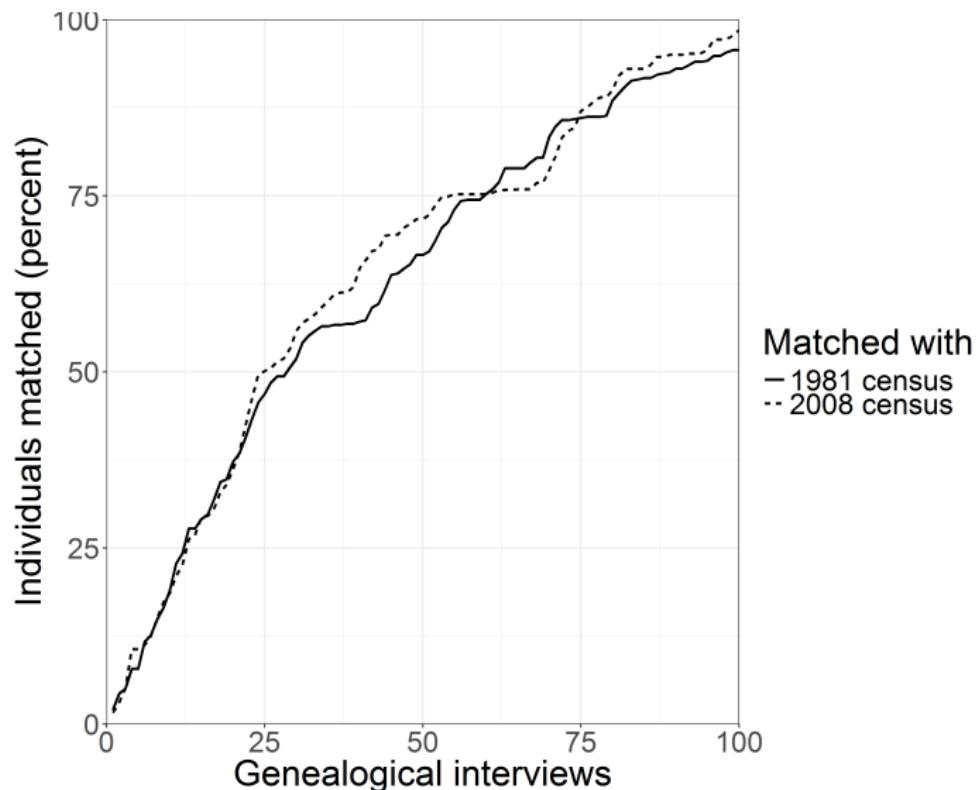
Thank you!

More information online: alburez.me/genealogy

Follow me on Twitter: [@d_alburez](https://twitter.com/d_alburez)

F. Annexes

Data completion 1: matching with census records



Data completion 2: matching with victims' data

Date	Location	Casualties by source	
		Douzant (2003)	Genealogical data
04/03/1980	Río Negro	7	3
13/02/1982	Xococ	77	79
13/03/1982	Pacoxom	177	164
14/05/1982	Los Encuentros	89 ^a	55
13/09/1982	Agua Fria	104 ^a	32

Extended family composition in 1982

