



UNIVERSITY OF COSTA RICA

A Joint Project of the Central American Population Center (CCP)
and the Institute for Health Research (INISA)

CRELES

COSTA RICAN LONGEVITY AND HEALTHY AGING STUDY

Survival Follow-Up Data Documentation

The information provided is completely confidential and voluntary
This is a translation of the original questionnaire used in the field in Spanish Language. Researchers should use, as far as possible, original questionnaires in Spanish language to have the exact questioning used in the study.

Description of the “All CRELES survival follow-up” datafile

This data file contains the survival follow-up results of participants from the two CRELES cohorts. Researchers can conduct prospective mortality analyses of CRELES participants until May 31, 2020, using this information. While the survival follow-up is an ongoing process that will likely continue until the CRELES cohorts are no longer alive, the file’s end-of-observation date has been set to exclude the impact of the COVID-19 pandemic.

We conducted the follow-up digitally using national registries of births, deaths, and presidential elections, which were provided to the University of Costa Rica by the Costa Rican “Tribunal Supremo de Elecciones” (TSE). A unique identifier number, assigned to every Costa Rican at birth (or upon acquiring citizenship), connects CRELES participants with these registries. The participant ID numbers were obtained during CRELES fieldwork (2005–2013) by reading their ID cards, which are known as “cédulas.”

We validated these ID numbers by comparing the date of birth, full name, and sex in the CRELES field records with the national registries. Four percent of participants had invalid ID numbers for follow-up; almost all of these individuals were foreign nationals.

As a longitudinal study, CRELES conducted exit interviews with relatives of deceased participants during subsequent revisit waves to gather information on deaths. This parallel data confirmed the near-completeness of the Costa Rican death registry. Out of the 621 Costa Rican citizens identified during CRELES fieldwork, only four (0.6%) deaths were not found in the national death registry.

Additionally, the exit interviews data provided information about 27 deaths among foreign citizens who are not traceable in the national death registry.

A third source of information used in this follow-up was the presidential election registers (“padrón electoral”) from 2014, 2018, and 2022. We discovered that 11 non-deceased participants had vanished from these electoral records. We categorized these cases as lost to follow-up and estimated their exit date by calculating the midpoint between the last documented contact and the first register indicating their disappearance.

To safeguard participant privacy, the data file omits precise dates; instead, it offers monthly dates. These dates adhere to the Stata format, with January 1960 designated as month zero.

In addition to the ID variables required to link observations to other files and the variables necessary for conducting survival-time analyses (primarily dates), the file contains a few fixed variables to streamline researchers’ work: participant sex, year-month of birth, and region of residence. Table 1 provides a detailed description of the included variables.

The dataset contains 6,976 observations, comprising 2,827 CRELES-pre1946 participants, 2,798 CRELES-RC target participants, and 1,351 CRELES-RC spouses. Among these spouses, 12 individuals were newly interviewed in wave 2. The total observation period spans 61,824

years (53,993 years if the analysis is limited to individuals aged 60 and above, which we strongly recommend). Notably, the dataset reports 2,231 deaths, resulting in a mortality rate of 36 deaths per 1,000 person-years. On average, each participant was observed for 8.9 years, with a range of 0 to 15.6 years. Table 2 and Figure 1 provide the age-specific mortality rates implicit in the dataset.

Table 1. Variables included in the survival datafile

Variable	Description
cohort_rc	Flag 1 if retirement cohort
Idsujeto	Id number of CRELES participants
Dead	Flag 1 if dead before June 2020
Modeath	Year-month date at death
yrdeath	Year at death
agedeath	Age at death
mocensor	Year-month date at censoring if not dead (= . if dead)
moentry	Year-month date at entering in observation (= mointerv1, except for 12 “new spouses” first interviewed in wave 2)
moexit	Year-month date at the end follow-up = June 2020
molast	Year-month date at the last contact with CRELES staff
mobirth	Year-month date at birth
mointerv1	Year-month date at interview Wave 1
mointerv2	Year-month date at interview Wave 2
mointerv3	Year-month date at interview Wave 3
sex	Sex updated with registry
participant	Type of participant in CRELES (target or spouse)
foreigner	Probably foreign national (no valid id number for follow-up)
urban	Flag 1 if residence in urban areas
gam	Flag 1 if residence in the great metro area of San Jose or GAM
nicoya	Flag 1 if residence in the Nicoya BZ
regioninec	The 7 regions defined by the Census Institute (INEC)

Note: the scale for a Year-month date has origin at January 1960 = 0.

Table 2. Death rates by 5-year age groups, CRELES follow-up until May 2020

Age	Deaths	Person-years	Rate per 1000	Lower C.I.	Upper C.I.
60 – 64	96	12,368.5	7.8	6.4	9.5
65 – 69	184	13,252.6	13.9	12.0	16.0
70 – 74	209	9,239.5	22.6	19.8	25.9
75 – 79	254	6,607.6	38.4	34.0	43.5
80 – 84	336	5,244.0	64.1	57.6	71.3
85 – 89	404	3,960.7	102.0	92.5	112.5
90 – 94	330	2,097.7	157.3	141.2	175.2
95 – 99	213	782.7	272.1	237.9	311.3
100 – 104	114	333.5	341.8	284.5	410.7
105 +	51	106.6	478.5	363.7	629.6

Figure 1. Death rates by age, CRELES follow-up until May 2020

