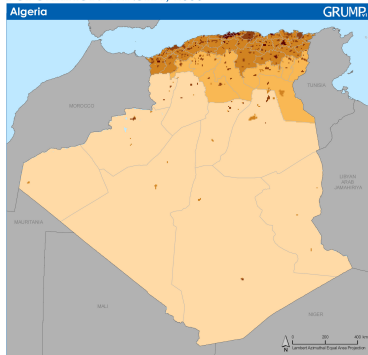# Mortality evolution in Algeria

Farid FLICI

(*) Department of Human Development and Social Protection
Centre for Research in Applied Economics for Development, CREAD, Algiers, ALGERIA.
e-mail: farid.flici@cread.edu.dz

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Introduction

- Independence of Algeria : 1962,
- 40 millions of residents in 2016,
- Surface : 2,382 millions km²

POPULATION DENSITY, 2000

Population Data in Algeria

- Census Data (Population pyramids) : 1966, 1977, 1987, 1998 and 2008,
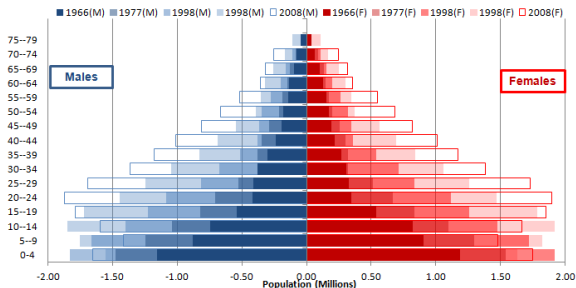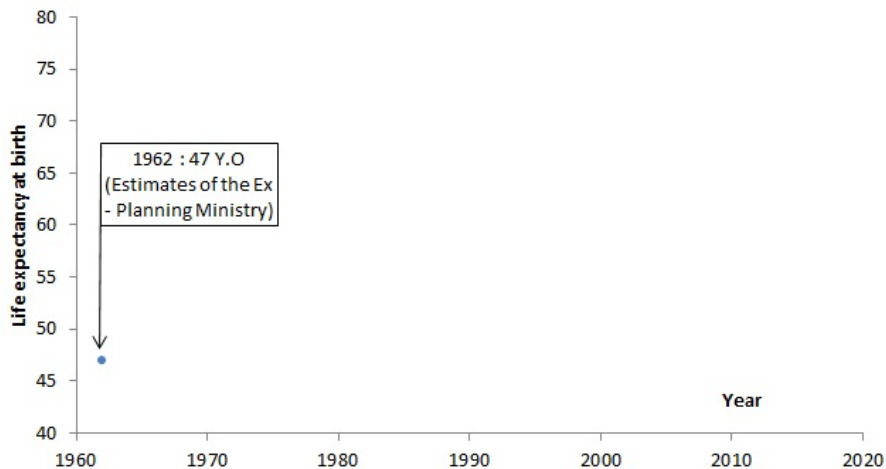
Mortality data in Algeria

- Multi Round Demographic Survey 1969-70 : a First life table for the Algerian Northern population,
- 1977 : a First life table (Global population) based on civil registration Data,
- Starting from 1998 : Annual frequency
- For some years [1977 - 1997] : missing life tables,
- Missing data estimation : FLICI, F (2014). "*Estimation of the missing data in the Algerian mortality surface*". Conference paper. SMTDA2014.
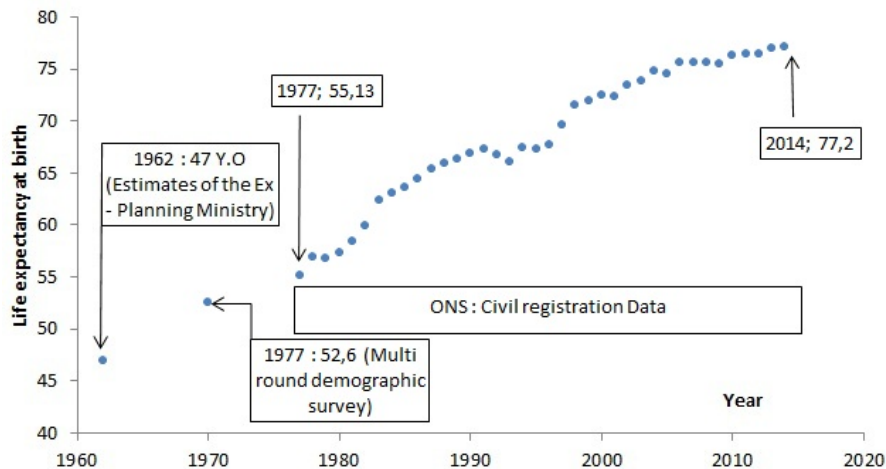
Life expectancy at birth

Life expectancy at birth

Life expectancy at birth

Other Sata Source
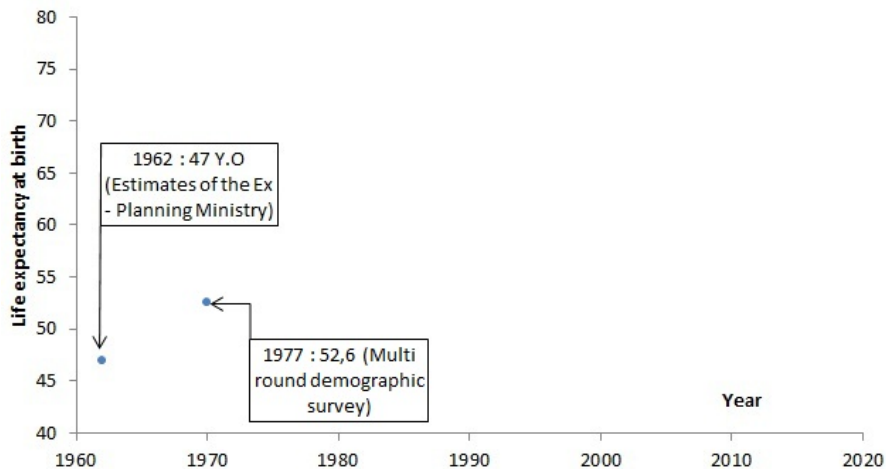
- Social Security Data :
- Life tables for retirees : FLICI and PLANCHET (2016) : "Construction of Dynamic Life tables adapted to the mortality experience of the Algerian Retired Population", Presented in ASF2016, Paris Dauphine University (France).
- Bezidane and Flici (2016) "Construction of social security life tables". Master Thesis. High School of Social Security. Algiers Algeria.
- Health Data : Multi Indicators Clustery Survey MICS 4 (2008 - 2012) / Specific Section 8 : Mortality, (Health Ministry, ONS and UNFPA)
- Flici and Hammouda (2016) analyzed mortality data in MICS-4 : Men 75,6 women 81,4 (2010).

Crude Data Correction factor

- Civil registration is incomplete,
- Coverage rate must be estimated by specific surveys,
- The Crude data must be corrected on the basis of these coverage rates (Correction factors)
- Coverage rates were first estimated in 1969-70 (Multi Round Demographic Survey), revised in 1981 (ONS demography and workforce survey) and revised again in 2002 with retroactive effect starting from 1998.
- No technical report in concern of the correction process,
- The evolution of mortality indicators was affected by changes of the correction factors

Effect of correction factor revision on mortality indicators evolution
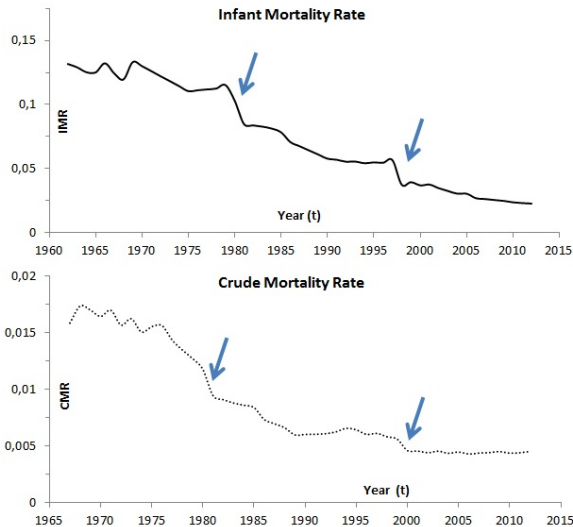
Closing out methodology imperfection

- Misestimation of mortality at old ages,
- A such imperfection is common for African Countries;

Ekanem and Som (1984) :

' ... we need to select an adequate model life tables among CDMLT or the UNMLT. Between the two, African countries prefer use the first model life tables to complete their mortality data. Mortality of the northern African countries is generally represented by the south type of CD life tables while the North type is used to describe the mortality pattern of sub-Saharan countries.... ''

- Model selection risk : The use of the stable population method (Coale and al, 1966 and 1983) doesn't guarantee a good model selection;
- LSE can also be used (Coale and al. 1966), but African use the first method;

Closing out methodology imperfection

- $\frac{e_{80}}{e_0}$ in the Algerian life tables compared to the Upper and lower bounds of UN and Coale-Demeny
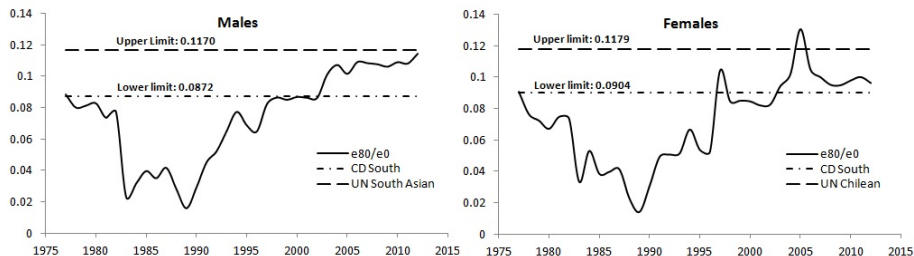
- Under estimation of e_{80} compared to e_0 before 2005
- FLICI (2016b) " Closing out the Algerian life tables : for more accuracy and adequacy at old ages", ASTIN Colloquium, June 2016.
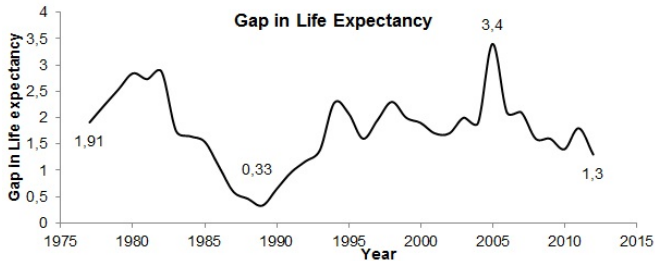
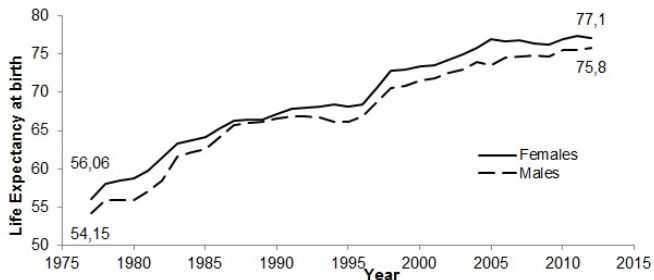# Life expectancy evolution analysis

- Change point analysis : level change + slope change (Askoy and al., 2007)
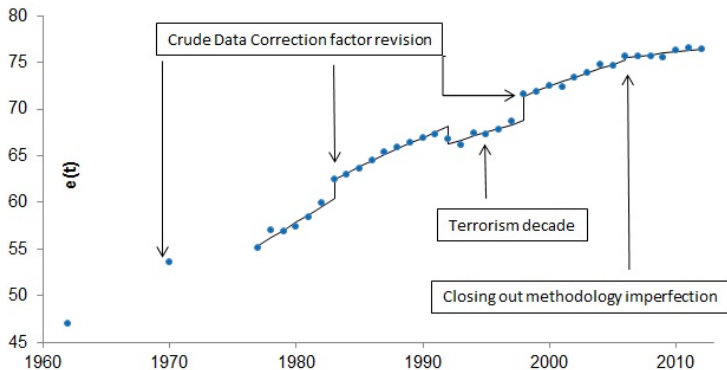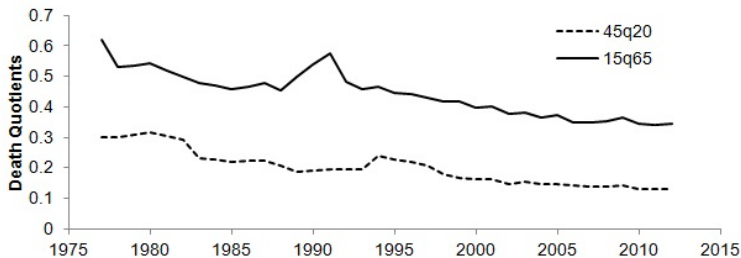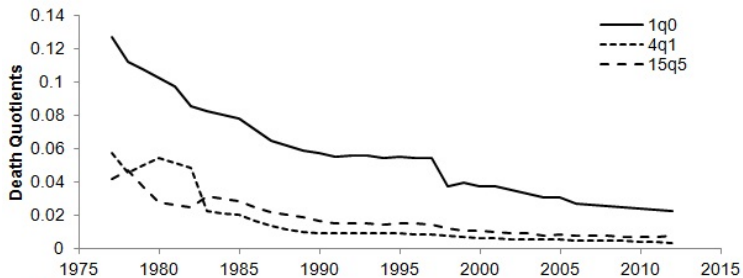

Source : Flici and Hammouda (2014)

Sex differential mortality evolution

Age specific mortality

- Methodological change effect (need for correction)
- need to compare more data sources : pension plan, social security, health data and civil registration

📄 Flici, F. 2014. Estimation of the missing data in the Algerian mortality surface by using an Age-time-segmented Lee Carter model. Conference paper. Stochastic Modeling and Data Analysis Conference. Lisbon, Portugal (June).

📄 Flici, F. and Hammouda, N.E. 2014. Analysis of half century of mortality changes in Algeria : 1962-2012. Conference paper. Middle East Economic Association Conference. Telemcen, Algeria (June).

📄 Flici, F. et Hammouda, N.E. 2016. Analyse de la mortalité en Algérie à travers les résultats de l'enquète MICS IV : Mortalité générale par age et sexe. Présentation atelier de restiution. Alger (January).

📄 Flici, F (2016), Closing out the Algerian life tables : for more accuracy and adequacy at old age, ASTIN colloquium, Lisbon (Portugal), June 2016.

📄 Flici, F and Planchet, F (2016), Construction of a dynamic life table adapted to the mortality experience of the Algerian retired population, conference paper, Statistical and Mathematical methods for Actuarial sciences and Finance, University Paris Dauphine (France), April 2016.

Ekanem, I and Som, R. 1984. The problem of choosing model life tables for African countries, Genius, Vol. 40, N° 1/2.