NEW RESEARCH

GENERAL POPULATION MORTALITY

The most recent POPULATION MORTALITY TABLE produced by ISTAT (http://www.istat.it/en/) according to the traditional census method refers to year 2011.

In 2012 ISTAT has shifted from 10-year census statistics to “continuous-census” system: data are collected from local institutions (in particular municipalities) on a one-year basis, and then submitted to a validation procedure.

Specific mortality tables are also available for geographical areas (North West, North East, Center, South, Isles)

ISTAT also produces Population Mortality Projections.

RESEARCH IN PROGRESS

PENSIONERS’ MORTALITY

Update of Mortality and Projected Mortality of Italian pensioners (see Section Population Mortality Improvements- Pensioners’ Mortality) will soon be published.
COUNTRY BACKGROUND

POPULATION

DEMOGRAPHICS

![Population size graph](image_url)
Population structure by age (2015)
Population dynamics
General population mortality tables are produced by ISTAT (http://www.istat.it/en/).

Survival curves $l_x$ (males)

Curves of deaths $d_x$ (males)
Mortality profiles (males)
Summary statistics (males): life expectancy at the birth, total life expectancy at 65, modal age at death (Lexis point)

<table>
<thead>
<tr>
<th>Life expectancy (period), census 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the birth</td>
</tr>
<tr>
<td>- males: 79.4</td>
</tr>
<tr>
<td>- females: 84.5</td>
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<tr>
<td>At age 65</td>
</tr>
<tr>
<td>- males: 18.4</td>
</tr>
<tr>
<td>- females: 21.5</td>
</tr>
</tbody>
</table>
Curves of deaths over age 65 (males)
Survival curves $l_x$ (2011; males – females)

One-year probabilities of death $q_x$ (2011; males – females)
GENERAL POPULATION MORTALITY

Population mortality estimated improvements result from projected tables produced by ISTAT (http://www.istat.it/en/).

Most recent mortality projection: 2012

Mortality projection based on Lee-Carter

Mortality projections in the framework of population projections (including fertility, immigration, etc.

Three demographic scenarios defined:

- unchanged current demographic scenario, extrapolation of recent mortality trend ⇒ central estimate
- various assumptions concerning immigration, fertility, etc. ⇒ high and low estimates

Projected life expectancy at age 65 (males)
PENSIONERS’ MORTALITY

Mortality of Italian pensioners have been analyzed by a Working Group coordinated by Ordine Nazionale degli Attuari (the Italian actuarial professional body)

Observation period: 1980 – 2009

Mortality projections to 2040 have been published

- Reference population:
  - almost 10 millions pensioners (in 2009), belonging to various pension plans, managed by public and private institutions
  - corresponding to approx 142 billions Euro of annual benefits

- Projection methods adopted:
  - stochastic methods: Lee-Carter model, log-bilinerar Poisson model, Renshaw-Haberman model with cohort effect
  - deterministic method: the APC (Age-Period-Cohort) model, proposed by the Continuous Mortality Investigation Bureau in UK

Ultimate aim: construction of projected mortality tables, separately referring to various “categories”, and in particular:

- pensioners of the private sector
- pensioners of the public sector
- self-employed, split into professional categories (lawyers, doctors, etc.)

Source (English text):
http://www.ordineattuari.it/media/6565/Rapporto%20percettori%20finale%20incl%20allegati%20ingles e_580.pdf

Some results are shown in the following Figures.
One-year probabilities of death (males – females)

One-year probabilities of death (males – females)
Life expectancy at 65 (males)

Life expectancy at 65 (females)
Projected life expectancy at 65 (males)

Projected life expectancy at 65 (females)
Main products sold in Individual Business:
- Endowment insurance (both participating and unit-linked), of course including death benefit
- Term insurance (frequently with rider benefits, in particular benefit uplift in the case of accidental death)
- Personal accident insurance

Underwriting; see: “Underwriting Around the World document”

In Group Business (e.g. employee benefit plans) insurance cover providing death (and permanent disability) benefit is in most cases compulsory.

Mortality Tables
- No insurance market table available

Mortality Improvements
- No insurance market data available
The life annuity market mainly consists of life annuities resulting from the annuitization of (part of) the amount available at the end of the accumulation period (commonly, at the retirement age); accumulation and decumulation phase are usually arranged as individual pension products. At the end of the accumulation phase, various options are available, aiming to add rider benefits to the basic life annuity; in particular:

- guarantee period (5 to 10 years);
- pay-back of the difference between the annuitized amount (single premium) and the total amount of benefits paid to the annuitant;
- last-survivor annuity, according to which (part of) the annuity benefit is paid to a stated beneficiary, as long as he/she is alive, after the death of the annuitant;
- long-term care uplift, that is, increase of the annuity benefit amount in the case of senescent disability.

Biometric bases for life annuities (for pricing and reserving) have been constructed by ANIA (the Association of Italian Insurance Companies). The following projected life tables, constructed in 2014, are available:

- Tables A1900-2020
  - two-dimension tables, for males and females;
  - derived from ISTAT 2011 projections, adjusted via coefficients (derived from CMI statistics) in order to account for self-selection;
- Tables A62
  - one-dimension tables, extracted from Tables A1900-2020, referring to the cohort 1962, for males and females;
  - age-shift method adopted for other cohorts;
  - in order to account for different self-selection degrees, the following specific projected life table have been constructed
    - A62I: immediate life annuities
    - A62D: deferred life annuities
    - A62C: group life annuities

Unigender life tables are available (according to the Unigender EU Directive), relying on various gender mix assumptions.
RELEVANT ORGANISATIONS

DETAILS ON GOVERNMENT STATISTICS DEPARTMENT
ISTAT: http://www.istat.it/en/

ACTUARIAL SOCIETY OF THE COUNTRY
ORDINE NAZIONALE DEGLI ATTUARI: http://www.ordineattuari.it/

INSURANCE REGULATOR
IVASS: http://www.ivass.it/ivass/imprese.jsp/HomePage.jsp