



North American Actuarial Journal >

Volume 11, 2007 - [Issue 2](#)

242 | 27 | 0
Views | CrossRef citations to date | Altmetric

Original Articles

Pension Plan Valuation and Mortality Projection

A Case Study with Mortality Data

Hélène Cossette, Antoine Delwarde, Michel Denuit, Frédérick Guillot & Étienne Marceau

Pages 1-34 | Published online: 02 Jan 2013

🗨️ Cite this article 🔗 <https://doi.org/10.1080/10920277.2007.10597445>

Sample our
Economics, Finance,
Business & Industry Journals
>> **Sign in here** to start your access
to the latest two volumes for 14 days

📖 References

🗨️ Citations

📊 Metrics

🖨️ Reprints & Permissions

Read this article

🔗 Share

Abstract

It is now well documented that human mortality globally declined during the course of the twentieth century. These mortality improvements pose a challenge for pricing and reserving in life insurance and for the management of public pension regimes. Assuming a further continuation of the stable pace of mortality decline, a Poisson log-bilinear projection model is applied to population mortality data to forecast future death rates. Then a relational model embedded in a Poisson regression approach is used to merge a dynamic mortality table based on data of a large population (in this case the Canadian province of Quebec) to mortality data of a given pension plan (here the Régie des Rentes du Québec) to create another dynamic mortality table, which can be used to make any assessments on the total costs of the pension plan. We provide at the end numerical examples that illustrate the impact of mortality improvements on a pension plan.

Related Research Data

Projecting Mortality Trends

Source: North American Actuarial Journal

Lee-Carter mortality forecasting with age-specific enhancement

Source: Insurance Mathematics and Economics

Survival models in a dynamic context: a survey

Source: Insurance Mathematics and Economics

Demography of longevity: past, present, and future trends

Source: Experimental Gerontology

Approaches and Experiences in Projecting Mortality Patterns for the Oldest-Old

Source: North American Actuarial Journal

Deceleration in the age pattern of mortality at older ages

Source: Demography

An Actuarial Survey of Statistical Models for Decrement and Transition Data, II.

Competing Risks, Non-Parametric and Regression Models

Source: British Actuarial Journal

Related research

People also read

Recommended articles

Cited by
27

Information for

[Authors](#)

[R&D professionals](#)

[Editors](#)

[Librarians](#)

[Societies](#)

Opportunities

[Reprints and e-prints](#)

[Advertising solutions](#)

[Accelerated publication](#)

[Corporate access solutions](#)

Open access

[Overview](#)

[Open journals](#)

[Open Select](#)

[Dove Medical Press](#)

[F1000Research](#)

Help and information

[Help and contact](#)

[Newsroom](#)

[All journals](#)

[Books](#)

Keep up to date

Register to receive personalised research and resources by email



Sign me up



Copyright © 2025 Informa UK Limited [Privacy policy](#) [Cookies](#) [Terms & conditions](#)

[Accessibility](#)

 Taylor and Francis Group

Registered in England & Wales No. 01072954
5 Howick Place | London | SW1P 1WG