Home ▶ All Journals ▶ Scandinavian Actuarial Journal ▶ List of Issues ▶ Volume 2004, Issue 1 ▶ Bootstrapping Parametric Models of Morta

Scandinavian Actuarial Journal > Volume 2004, 2004 - Issue 1

140 6

0

Views CrossRef citations to date Altmetric

Original Articles

Bootstrapping Parametric Models of Mortality

Grzegorz A. Rempala & Konrad Szatzschneider

Pages 53-78 | Accepted 17 Jun 2002, Published online: 18 Feb 2007

Sample our Economics, Finance, Business & Industry journals, sign in here to start your access, latest two full volumes FREE to you for 14 days

Full Article

Figures & data

References

66 Citations

Metrics

➡ Reprints & Permissions

Read this article

Abstract

We consider a general problem of modeling a mortality law of a population of failing units with some parametric function. In this setting we define a mortality table of crude rates as a statistical estimator with multinomial distribution and show its consistency as well as asymptotic normality. We further derive the statistical properties of parameter estimators in a parametric mortality model based on a weighted square loss function. We use the obtained results to study consistency and appropriateness of the parametric bootstrap method in our setting. We derive the conditions on the assumed parametric mortality law and the loss function, under which the bootstrap is consistent

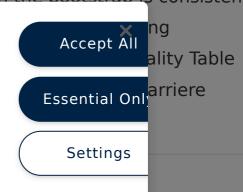
for estim

confider



About Cookies On This Site

We and our partners use cookies to enhance your website experience, learn how our site is used, offer personalised features, measure the effectiveness of our services, and tailor content and ads to your interests while you navigate on the web or interact with us across devices. You can choose to accept all of these cookies or only essential cookies. To learn more or manage your preferences, click "Settings". For further information about the data we collect from you, please see our Privacy Policy



The authors would like to acknowledge the anonymous referees whose thoughtful comments and suggestions have considerably improved the quality of the paper. This research was partially sponsored by an Intramural Research Incentive Grant from the Office of Vice President for Research.

Notes

Rempala GA and Szatzschneider K. Bootstrapping parametric models of mortality. Scand. Actuarial J. 2004; 2004: 53–78.

We realize that in many actuarial applications the data available for the construction of mortality rates is very different that used in Eq. (2.1). However, for the most part of the discussion presented in this paper the actual way of arriving at the values of the components of $q^{(n)}$ is irrelevant, as long as we can assume their asymptotic independence and normality (see Theorem 4.1). We have chosen to consider model given by Eq. (2.1) due to its simplicity as well as relevance to the general survival analysis theory.

Adjusting for this type of censoring would make a difference only for the relatively small sample sizes (n).

The resample size n is typically assumed to maximize the efficiency of the bootstrap. However, for very large n, like e.g., n=100~000 used in the US Mortality Table, it may be more practical to consider resamples of smaller size $m=m_n$. All our theoretical results on bootstrap consistency, carry over to this case, as long as $m_n \to \infty$ when $n \to \infty$. See, e.g., Bickel et al. (1997) for the discussion of these issues.

The results of this section show also the validity of the multivariate bootstrap

approxir and Tu (

In order meti About Cookies On This Site

We and our partners use cookies to enhance your website experience, learn how our site is used, offer personalised features, measure the effectiveness of our services, and tailor content and ads to your interests while you navigate on the web or interact with us across devices. You can choose to accept all of these cookies or only essential cookies. To learn more or manage your preferences, click "Settings". For further information about the data we collect from you, please see our Privacy Policy

Essential Onlie same

Settings

to obtain

in the ta the valu

Related research (1)



People also read

Recommended articles

Cited by

About Cookies On This Site



We and our partners use cookies to enhance your website experience, learn how our site is used, offer personalised features, measure the effectiveness of our services, and tailor content and ads to your interests while you navigate on the web or interact with us across devices. You can choose to accept all of these cookies or only essential cookies. To learn more or manage your preferences, click "Settings". For further information about the data we collect from you, please see our Privacy Policy

Accept All

Essential Only

Settings

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 © 2024 Informa UK Limited Privacy policy Cookies Terms & conditions

Taylor & Francis Group an informa business

Accessibility

Registered in England & Wales No. 3099067 5 Howick Place | London | SW1P 1WG

About Cookies On This Site



We and our partners use cookies to enhance your website experience, learn how our site is used, offer personalised features, measure the effectiveness of our services, and tailor content and ads to your interests while you navigate on the web or interact with us across devices. You can choose to accept all of these cookies or only essential cookies. To learn more or manage your preferences, click "Settings". For further information about the data we collect from you, please see our Privacy Policy



Essential Onl

Settings