

ISSN 1465-4644 (PRINT)
ISSN 1468-4357 (ONLINE)

Biostatistics

VOLUME 10 NUMBER 3 JULY 2009

www.biostatistics.oxfordjournals.org



Biostatistics



Co-Editors

Peter J. Diggle
Scott L. Zeger

Advisory Board

Norman Breslow
David Cox
Sarah Darby
Peter Diggle
Mitchell Gail
Niels Keiding
Scott Zeger

Associate Editors

Rebecca Betensky
Adrian Bowman
Maria De Iorio
Paddy Farrington
Jason Fine
Joseph Hogan
Philip Hougaard
Hans van Houwelingen
Katja Ickstadt
Rafael Irizarry
Bani Mallick
Tom Nye
Roger Peng
Margaret Pepe
Louise M. Ryan
Naisyin Wang



OXFORD JOURNALS
OXFORD UNIVERSITY PRESS

Subscriptions

A subscription to *Biostatistics* comprises 4 issues. Prices include postage by surface mail, or for subscribers in the USA and Canada by airfreight, or in India, Japan, Australia and New Zealand by Air Speeded Post.

Annual Subscription Rate (Volume 10, 4 issues, 2009)

Institutional

Print edition and site-wide online access:
£348/US\$696/€522

Print edition only: £331/US\$662/€497

Site-wide online access only: £317/US\$634/€476

Personal

Print edition: £167/US\$334/€251

Please note: US\$ rate applies to US & Canada, Euros applies to Europe, UK£ applies to UK and Rest of World. There are other subscription rates available; for a complete listing please visit

www.biostatistics.oxfordjournals.org/subinfo.

Full pre-payment in the correct currency is required for all orders. Payment should be in US dollars for orders being delivered to the USA or Canada; Euros for orders being delivered within Europe (excluding the UK); GBP sterling for orders being delivered elsewhere (i.e. not being delivered to USA, Canada, or Europe). All orders should be accompanied by full payment and sent to your nearest Oxford Journals office. Subscriptions are accepted for complete volumes only. Orders are regarded as firm, and payments are not refundable. Our prices include Standard Air as postage outside of the UK. Claims must be notified within four months of despatch/order date (whichever is later). Subscriptions in the EEC may be subject to European VAT. If registered, please supply details to avoid unnecessary charges. For subscriptions that include online versions, a proportion of the subscription price may be subject to UK VAT. Subscribers in Canada, please add GST to the prices quoted. Personal rate subscriptions are only available if payment is made by personal cheque or credit card, delivery is to a private address, and is for personal use only.

The current year and two previous years' issues are available from Oxford University Press. Previous volumes can be obtained online at <http://www.periodicals.com/oxford.html> or from the Periodicals Service Company, 11 Main Street, Germantown, NY 12526, USA. Email: psc@periodicals.com. Tel: +1 (518) 537 4700. Fax: +1 (518) 537 5899.

For further information, please contact: Journals Customer Service Department, Oxford University Press, Great Clarendon Street, Oxford OX2 6DP, UK. Email: jnls.cust.serv@oxfordjournals.org. Tel (and answerphone outside normal working hours): +44 (0)1865 353907. Fax: +44 (0)1865 353485. **In the US, please contact:** Journals Customer Service Department, Oxford University Press, 2001 Evans Road, Cary, NC 27513, USA. Email: jnlorders@oxfordjournals.org. Tel (and answerphone outside normal working hours): 800 852 7323 (toll-free in USA/Canada). Fax: 919 677 1714. **In Japan, please contact:** Journals Customer Services, Oxford University Press, 4-5-10-8F, Shiba, Minato-ku, Tokyo, 108-8386, Japan. Email: custserv.jp@oxfordjournals.org. Tel: +81 3 5444 5858. Fax: +81 3 3454 2929.

Methods of payment. (i) Check (payable to Oxford University Press, to Oxford University Press, Cashiers Office, Great Clarendon Street, Oxford OX2 6DP, UK) in GBE Sterling (drawn on a UK bank), US\$ Dollars (drawn on a US bank), or EU€ Euros. (ii) Bank transfer to Barclays Bank Plc, Oxford Group Office, Oxford (bank sort code 20-65-18) (UK),

overseas only Swift code BARC GB 22 (GB£ Sterling to account no. 70299332, IBAN GB89BARC20651870299332; US\$ Dollars to account no. 66014600, IBAN GB27BARC20651866014600; EU€ Euros to account no. 78923655, IBAN GB16BARC20651878923655). (iii) Credit card (Mastercard, Visa, Switch or American Express).

Biostatistics (ISSN 1465-4644) is published quarterly in January, April, July, and October by Oxford University Press, Cary, NC. *Biostatistics* is distributed by DHL, Mills Road, Quarry Wood Industrial Estate, Aylesford, Kent ME20 7WZ, UK. Periodicals postage paid at Rahway, NJ, and at additional entry points.

US Postmaster: send address changes to *Biostatistics*, c/o Mercury International, 365 Blair Road, Avenel, NJ 07001.

Oxford Journals Environmental and Ethical Policies

Oxford Journals is committed to working with the global community to bring the highest quality research to the widest possible audience. Oxford Journals will protect the environment by implementing environmentally friendly policies and practices wherever possible. Please see <http://www.oxfordjournals.org/ethicalpolicies.html> for further information on Oxford Journals' environmental and ethical policies.

Digital Object Identifiers

For information on dois and to resolve them, please visit www.doi.org.

Permissions

For information on how to request permissions to reproduce articles/information from this journal, please visit www.oxfordjournals.org/jnls/permissions.

Advertising

Advertising, inserts, and artwork enquiries should be addressed to Advertising and Special Sales, Oxford Journals, Oxford University Press, Great Clarendon Street, Oxford, OX2 6DP, UK. Tel: +44 (0)1865 354767; Fax: +44 (0)1865 353774; E-mail: jnlsadvertising@oxfordjournals.org.

Submissions

For instructions on submitting a manuscript to *Biostatistics*, Please see the Instructions to Authors at www.biostatistics.oxfordjournals.org.

Disclaimer

Statements of fact and opinion in the articles in *Biostatistics* are those of the respective authors and contributors and not of *Biostatistics* or Oxford University Press. Neither Oxford University Press nor *Biostatistics* make any representation, express or implied, in respect of the accuracy of the material in this journal and cannot accept any legal responsibility or liability for any errors or omissions that may be made. The reader should make his/her own evaluation as to the appropriateness or otherwise of any experimental technique described.

© 2009 Oxford University Press; all rights reserved.

All rights reserved; no part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without prior written permission of the Publishers, or a licence permitting restricted copying issued in the UK by the Copyright Licensing Agency Ltd, 90 Tottenham Court Road, London W1P 9HE, or in the USA by the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.