



Shaftesbury Road, Cambridge CB2 8EA, United Kingdom  
 One Liberty Plaza, 20th Floor, New York, NY 10006, USA  
 477 Williamstown Road, Port Melbourne, VIC 3207, Australia  
 314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi – 110025, India  
 103 Penang Road, #05–06/07, Visioncrest Commercial, Singapore 238467

Cambridge University Press is part of Cambridge University Press & Assessment,  
 a department of the University of Cambridge.

We share the University's mission to contribute to society through the pursuit of  
 education, learning and research at the highest international levels of excellence.

[www.cambridge.org](http://www.cambridge.org)  
 Information on this title: [www.cambridge.org/9780521864015](http://www.cambridge.org/9780521864015)

© Piet Groeneboom and Geurt Jongbloed 2014

This publication is in copyright. Subject to statutory exception and to the provisions  
 of relevant collective licensing agreements, no reproduction of any part may take  
 place without the written permission of Cambridge University Press & Assessment.

First published 2014

*A catalogue record for this publication is available from the British Library*

*Library of Congress Cataloging-in-Publication data*  
 Groeneboom, P.

Nonparametric estimation under shape constraints : estimators, algorithms and asymptotics / Piet Groeneboom,  
 Technische Universiteit Delft, The Netherlands, Geurt Jongbloed, Technische Universiteit Delft, The Netherlands.  
 pages cm. – (Cambridge series in statistical and probabilistic mathematics ; 38)

Includes bibliographical references and index.

ISBN 978-0-521-86401-5 (hbk.)

1. Nonparametric statistics. 2. Multivariate analysis. 3. Mathematical statistics. 4. Estimation theory.

I. Jongbloed, Geurt, 1968– II. Title.

QA278.8.G76 2014

519.5'4–dc23 2014022148

ISBN 978-0-521-86401-5 Hardback

Additional resources for this publication at <http://statistics.tudelft.nl/CUPbook>

Cambridge University Press & Assessment has no responsibility for the persistence  
 or accuracy of URLs for external or third-party internet websites referred to in this  
 publication and does not guarantee that any content on such websites is, or will  
 remain, accurate or appropriate.