

ONLY • FOR SALE IN PHILIPPINES ONLY

FIFTH EDITION



# Jekel's EPIDEMIOLOGY, BIOSTATISTICS, PREVENTIVE MEDICINE, AND PUBLIC HEALTH

Joann G. Elmore • Dorothea M.G. Wild • Heidi D. Nelson • David L. Katz



## RESTRICTED PHILIPPINES EDITION

This edition is licensed for sale in Philippines only. This edition is not authorized for export outside Philippines. Circulation of this edition outside Philippines is unauthorized and illegal.

# Jekel's

# EPIDEMIOLOGY, BIOSTATISTICS, PREVENTIVE MEDICINE, and PUBLIC HEALTH

FIFTH EDITION

**Joann G. Elmore, MD, MPH**

Professor of Medicine  
The Rosalinde and Arthur Gilbert Foundation Endowed  
Chair in Health Care Delivery  
David Geffen School of Medicine at UCLA  
Professor of Health Policy and Management  
UCLA Fielding School of Public Health  
Director  
UCLA National Clinician Scholars Program  
Los Angeles, California

**Dorothea M.G. Wild, MD, MPH**

Research Affiliate  
Institute of General Practice and Family Medicine  
University of Bonn  
Bonn, Germany

**Heidi D. Nelson, MD, MPH, MACP, FRCP**

Professor  
Medical Informatics and Clinical Epidemiology  
and Medicine  
Director  
Scholarly Projects  
School of Medicine  
Oregon Health & Science University  
Portland, Oregon

**David L. Katz, MD, MPH**

President  
True Health Initiative  
Founding Director  
Prevention Research Center  
Yale University/Griffin Hospital  
New Haven, Connecticut



ELSEVIER



Elsevier (Singapore) Pte. Ltd.

3, Killiney Road, Winsland House I, Singapore 239519

**Jekel's Epidemiology, Biostatistics, Preventive Medicine, and Public Health, 5e** by Joann G. Elmore, Dorothea M.G. Wild, Heidi D. Nelson, and David L. Katz

Copyright © 2020 by Elsevier Inc. All rights reserved.  
Previous edition copyrighted 2014, 2017, 2001.

ISBN: 978-0-323-64201-9

This reprint of **Jekel's Epidemiology, Biostatistics, Preventive Medicine, and Public Health, 5e** by Joann G. Elmore, Dorothea M.G. Wild, Heidi D. Nelson, and David L. Katz was undertaken by Elsevier (Singapore) Pte. Ltd and is published by arrangement with Elsevier Inc.

**Jekel's Epidemiology, Biostatistics, Preventive Medicine, and Public Health, 5e** by Joann G. Elmore, Dorothea M.G. Wild, Heidi D. Nelson, and David L. Katz  
Copyright © 2020 by Elsevier (Singapore) Pte. Ltd.

Reprint ISBN: 978-981-486-591-3  
First Reprinted in Philippines 2020

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Details on how to seek permission, further information about the Publisher's permissions policies and our arrangements with organizations such as the Copyright Clearance Center and the Copyright Licensing Agency, can be found at our website: [www.elsevier.com/permissions](http://www.elsevier.com/permissions).

This book and the individual contributions contained in it are protected under copyright by the Publisher (other than as may be noted herein).

#### Notice

Practitioners and researchers must always rely on their own experience and knowledge in evaluating and using any information, methods, compounds or experiments described herein. Because of rapid advances in the medical sciences, in particular, independent verification of diagnoses and drug dosages should be made. To the fullest extent of the law, no responsibility is assumed by Elsevier, authors, editors or contributors in relation to the adaptation or for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein.

This reprint is licensed for sale in Philippines only. Circulation of this version outside these territories is unauthorized and illegal.

*Online resources are not available with this reprint. To access any or all of these assets, the original edition must be purchased by the individual user.*

Printed in Philippines

# CONTENTS

## SECTION 1 Epidemiology

---

- 1 Basic Epidemiologic Concepts and Principles, 2
- 2 Epidemiologic Data Measurements, 17
- 3 Epidemiologic Surveillance and Epidemic Outbreak Investigation, 35
- 4 The Study of Risk Factors and Causation, 55
- 5 Common Research Designs and Issues in Epidemiology, 67
- 6 Assessment of Risk and Benefit in Epidemiologic Studies, 83
- 7 Understanding the Quality of Medical Data, 98

## SECTION 2 Biostatistics

---

- 8 Describing Variation and Distribution of Data, 114
- 9 Testing Hypotheses, 130
- 10 Analyzing Relationships Between Two Variables, 149
- 11 Analyzing Relationships Between Multiple Variables, 172
- 12 Using Statistics to Design Studies: *Sample Size Calculation, Randomization, and Controlling for Multiple Hypotheses*, 182  
*With Martiniano J. Flores*
- 13 Using Statistics to Answer Clinical Questions: *Meta-Analysis, Bayes Theorem and Predictive Values of Tests, and Decision Analysis*, 194

## SECTION 3 Preventive Medicine

---

- 14 Introduction to Preventive Medicine, 208
- 15 Methods of Primary Prevention: Health Promotion and Disease Prevention, 221

- 16 Principles and Practice of Secondary Prevention, 236
- 17 Methods of Tertiary Prevention, 249
- 18 Developing Recommendations for Clinical Preventive Services, 261
- 19 Chronic Disease Prevention, 271
- 20 Prevention of Infectious Diseases, 284  
*With Patricia E. Wetherill*
- 21 Prevention of Mental Health and Behavior Problems, 301  
*Elizabeth C. Katz*
- 22 Occupational Medicine and Environmental Health, 313  
*Mark Russi*
- 23 Injury Prevention, 325

## SECTION 4 Public Health

---

- 24 Introduction to Public Health, 336
- 25 The US Public Health System: Structure and Function, 354
- 26 Improving Public Health in Communities, 368  
*With Thiruvengadam Muniraj*
- 27 Disaster Epidemiology and Surveillance, 384  
*Linda C. Degutis*
- 28 Health Services Organization, Financing, and Quality Improvement, 391  
*With Haq Nawaz*
- 29 Health Care Organization, Policy, and Financing, 408  
*With Casey Covarrubias*
- 30 Integrating Efforts for Clinical Care, Research, and Public Health Action—One Science, One Planet, One Health, 423

Index, 429

FIFTH EDITION

# Jekel's

# EPIDEMIOLOGY, BIOSTATISTICS, PREVENTIVE MEDICINE, AND PUBLIC HEALTH

Joann G. Elmore  
Dorothea M.G. Wild  
Heidi D. Nelson  
David L. Katz

Distributed by  
**C&E Publishing, Inc.**  
Towards Academic and Professional Excellence  
#39 EDSA South Triangle, Quezon City, Philippines  
Tel No. (632) 8929-5088 E-mail: info@cebookshop.com  
[www.cebookshop.com](http://www.cebookshop.com)

### RESTRICTED PHILIPPINES EDITION

This edition is licensed for sale in Philippines only. This edition is not authorized for export outside Philippines. Circulation of this edition outside Philippines is unauthorized and illegal.

ISBN: 978-981-486-591-3



9 789814 865913



ELSEVIER

[elsevier.com](http://elsevier.com)