

## References

### Introduction

King G. Charles Proteus Steinmetz, the Wizard of Schenectady. <https://www.smithsonianmag.com/history/charles-proteus-steinmetz-the-wizard-of-schenectady-51912022/> 2011. Accessed October 11, 2018.

Rosenfeld A. The Thunderer's Legacy. *Life Mag* 1965:53–8. <https://www.OLDLIFEMAGAZINES.COM/april-23-1965-life-magazine.html>. Accessed October 11, 2018.

### Chapter 1

Almada L, McCarthy I, Tchernis R. What Can We Learn about the Effects of Food Stamps on Obesity in the Presence of Misreporting? *Am J Agric Econ* 2016;98:997–1017.

Buffler PA, Ginevan ME, Mandel JS *et al.* The Air Force Health Study: An Epidemiologic Retrospective. *Ann Epidemiol* 2011;21:673–87.

Carroll R. Uganda's Aids success story challenged. *The Guardian*. <https://www.theguardian.com/society/2004/sep/23/internationalaidanddevelopment.aids>. Accessed October 11, 2018.

Fletcher RH, Fletcher SW, Fletcher GS. *Clinical Epidemiology: The Essentials*. LWW: 2012.

Kron J. In Uganda, an AIDS Success Story Comes Undone. *The New York Times*. 2012.

LaMorfe WW. Bias. [http://sphweb.bumc.bu.edu/otlt/MPH-Modules/EP/EP713\\_Bias/EP713\\_Bias\\_print.html](http://sphweb.bumc.bu.edu/otlt/MPH-Modules/EP/EP713_Bias/EP713_Bias_print.html). Accessed October 11, 2018.

Leung CW, Villamor E. Is participation in food and income assistance programmes associated with obesity in California adults? Results from a state-wide survey. *Public Health Nutr* 2011;14:645–52.

Mitchell AA, Cottler LB, Shapiro S. Effect of questionnaire design on recall of drug exposure in pregnancy. *Am J Epidemiol* 1986;123:670–6.

Ntozi JP, Lubaale YM, Nakanaabi IM. AIDS mortality in Uganda: circumstances, factors and impact of death. *Health Transit Rev* 1997;7 Suppl:207–24.

Rigdon J, Berkowitz SA, Seligman HK *et al.* Re-evaluating associations between the Supplemental Nutrition Assistance Program participation and body mass index in the context of unmeasured confounders. *Soc Sci Med* 2017;192:112–24.

Slater CA, Davis RB, Shmerling RH. Antinuclear antibody testing. A study of clinical utility. *Arch Intern Med* 1996;156:1421–5.

## Chapter 2

Ashwood JS, Mehrotra A, Cowling D *et al.* Direct-To-Consumer Telehealth May Increase Access To Care But Does Not Decrease Spending. *Health Aff* 2017;36:485–91.

Berger ML, Teutsch S. Cost-Effectiveness Analysis. *Med Care* 2005;43:II-49-II-53.

Birch S, Donaldson C. Applications of cost-benefit analysis to health care: Departures from welfare economic theory. *J Health Econ* 1987;6:211–25.

de la Torre-Díez I, López-Coronado M, Vaca C *et al.* Cost-utility and cost-effectiveness studies of telemedicine, electronic, and mobile health systems in the literature: a systematic review. *Telemed J E Health* 2015;21:81–5.

Drummond M, Sculpher M, Torrance GW *et al.* *Methods for the Economic Evaluation of Health Care Programmes*. New York City: Oxford University Press, 2005.

Gafni A. The standard gamble method: what is being measured and how it is interpreted. *Health Serv Res* 1994;29:207–24.

Gold MR. *Cost-Effectiveness in Health and Medicine*. New York: Oxford University Press, 1996.

Grosse SD. Assessing cost-effectiveness in healthcare: history of the \$50,000 per QALY threshold. *Expert Rev Pharmacoecon Outcomes Res* 2008;8:165–78.

Katz DA, Welch HG. Discounting in cost-effectiveness analysis of healthcare programmes. *Pharmacoeconomics* 1993;3:276–85.

Russell LB. Population Health: Behavioral and Social Science Insights. 2015, DOI: 10.1787/health\_glance-2011-en.

Neumann PJ, Sanders GD, Russell LB *et al.* *Cost Effectiveness in Health and Medicine*. New York: Oxford University Press, 2016.

Sanders GD, Neumann PJ, Basu A *et al.* Recommendations for Conduct, Methodological Practices, and Reporting of Cost-effectiveness Analyses. *JAMA* 2016;316:1093.

Stiggelbout AM, de Haes JCJM. Patient Preference for Cancer Therapy: An Overview of Measurement Approaches. *J Clin Oncol* 2001;19:220–30.

Torrance GW. Measurement of health state utilities for economic appraisal. *J Health Econ* 1986;5:1–30.

Ware J, Sherbourne CD. The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Med Care* 1992;473–83.

Weinstein MC, Siegel JE, Gold MR *et al.* Recommendations of the Panel on Cost-Effectiveness in Health and Medicine. *JAMA J Am Med Assoc* 1996;276:1253.

Whitehead SJ, Ali S. Health outcomes in economic evaluation: the QALY and utilities. *Br Med Bull* 2010;96:5–21.

World Health Organization. *Disability Weights, Discounting and Age Weighting of DALYs*. Geneva: World Health Organization, 2014. [http://www.who.int/healthinfo/global\\_burden\\_disease/daly\\_disability\\_weight/en/](http://www.who.int/healthinfo/global_burden_disease/daly_disability_weight/en/). Accessed October 11, 2018.

U.S. National Library of Medicine. *Health Economics Information Resources: A Self-Study Course: Module 4*. U.S. National Library of Medicine, 2016. [https://www.nlm.nih.gov/nichsr/edu/healthecon/04\\_he\\_03.html](https://www.nlm.nih.gov/nichsr/edu/healthecon/04_he_03.html). Accessed October 11, 2018.

## Chapter 3

Briggs A, Sculpher M. An Introduction to Markov Modelling for Economic Evaluation. *Pharmacoeconomics* 1998;13:397–409.

Briggs ADM, Wolstenholme J, Blakely T *et al.* Choosing an epidemiological model structure for the economic evaluation of non-communicable disease public health interventions. *Popul Health Metr* 2016;14:17.

Drummond M, McGuire A. *Economic Evaluation in Health Care: Merging Theory with Practice*. New York: Oxford University Press, 2001.

Gagniuc PA. *Markov Chains: From Theory to Implementation and Experimentation*. Hoboken: Wiley, 2017.

McGhee CR, Glasser JH, Chan W, Pomeroy N, Chan W. Forecasting Health Care Expenditures and Utilization Based on a Markov Process and a Deterministic Cost Function in Managed Care Settings on JSTOR. *Crossing Boundaries Stat Essays Honor Jack Hal* 2003;43:229–38.

Sonnenberg FA, Beck JR. Markov Models in Medical Decision Making. *Med Decis Mak* 1993;13:322–38.

Weinstein MC, Coxson PG, Williams LW *et al*. Forecasting coronary heart disease incidence, mortality, and cost: the Coronary Heart Disease Policy Model. *Am J Public Health* 1987;77:1417–26.

## Chapter 4

Delignette-Muller ML, Dutang C. fitdistrplus : An *R* Package for Fitting Distributions. *J Stat Softw* 2015;64:1–34.

Grolemund G. *Hands-on Programming with R*. Sebastopol: O'Reilly Media, 2014.

R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. 2018. <https://www.R-project.org/>. Accessed October 11, 2018.

Teetor P, Loukides MK. *R Cookbook*. Sebastopol: O'Reilly, 2011.

Venables WN, Ripley BD. *Modern Applied Statistics with S*. New York: Springer-Verlag, 2002.

Wickham H, Grolemund G. *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*. Sebastopol: O'Reilly Media, 2017.

## Chapter 5

Anderson RM. Discussion: The Kermack-McKendrick epidemic threshold theorem. *Bull Math Biol* 1991;53:1–32.

Anderson RM, May RM. *Infectious Diseases of Humans: Dynamics and Control*. Oxford University Press, 1991.

Anderson RM, May RM. Vaccination and herd immunity to infectious diseases. *Nature* 1985;318:323–9.

Andrews JR, Basu S. Transmission dynamics and control of cholera in Haiti: an epidemic model. *Lancet* 2011;377:1248–55.

Balakrishnan N, Basu AP. *The Exponential Distribution: Theory, Methods, and Applications*. Gordon and Breach, 1995.

Blower S, McLean A, Hopewell PC. Prophylactic vaccines, risk behavior change, and the probability of eradicating HIV in San Francisco. *Science (80)* 1994;265:1451–4.

Brauer F. The Kermack–McKendrick epidemic model revisited. *Math Biosci* 2005;198:119–31.

Brauer F, Castillo-Chavez C. *Mathematical Models in Population Biology and Epidemiology*. Springer, 2012.

Brauer F, Van den Driessche P, Wu J *et al.* *Mathematical Epidemiology*. Springer, 2008.

Capasso V, Serio G. A generalization of the Kermack-McKendrick deterministic epidemic model. *Math Biosci* 1978;42:43–61.

Castillo-Chávez C, Blower S, van den Driessche P *et al.* *Mathematical Approaches for Emerging and Reemerging Infectious Diseases: An Introduction*. Springer, 2002.

Chao DL, Longini IM, Morris JG. *Modeling Cholera Outbreaks*. Springer, Berlin, Heidelberg, 2013, 195–209.

Collett D. *Modelling Survival Data in Medical Research, Third Edition*. Chapman and Hall/CRC, 2015.

Diekmann O, Heesterbeek JAP. *Mathematical Epidemiology of Infectious Diseases: Model Building, Analysis, and Interpretation*. John Wiley, 2000.

Diekmann O, Heesterbeek H, Britton T. *Mathematical Tools for Understanding Infectious Diseases Dynamics*. Princeton University Press, 2013.

Dietz K. The estimation of the basic reproduction number for infectious diseases. *Stat Methods Med Res* 1993;2:23–41.

Drake J. Simulating Epidemics in R.

[https://ms.mcmaster.ca/~bolker/eeid/2011\\_eco/EEID2011\\_Simulation.pdf](https://ms.mcmaster.ca/~bolker/eeid/2011_eco/EEID2011_Simulation.pdf) 2011.

Accessed October 11, 2018.

Hosmer DW, Lemeshow S, May S. *Applied Survival Analysis: Regression Modeling of Time-to-Event Data*. Wiley-Interscience, 2008.

Findlater A. The basic SIR model in R.

<https://archives.aidanfindlater.com/blog/2010/04/20/the-basic-sir-model-in-r/> 2010.

Accessed October 11, 2018.

Fung IC-H. Cholera transmission dynamic models for public health practitioners. *Emerg Themes Epidemiol* 2014;11:1.

Guangchuang Yu. SIR Model of Epidemics. <https://www.r-bloggers.com/sir-model-of-epidemics/> 2014. Accessed October 11, 2018.

Hartley DM, Morris JG, Smith DL. Hyperinfectivity: A Critical Element in the Ability of *V. cholerae* to Cause Epidemics? Ferguson N (ed.). *PLoS Med* 2005;3:e7.

Heesterbeek H. The Law of Mass-Action in Epidemiology: A Historical Perspective. *Ecological Paradigms Lost: Routes of Theory Change*. Beatrix Beisner. Elsevier, 2005.

Hethcote HW. Three Basic Epidemiological Models. Springer, Berlin, Heidelberg, 1989, 119–44.

Joh E. SIR model with deSolve & ggplot2. <https://incidental-ideas.org/2017/01/04/sir-model-with-desolve-ggplot2/> 2017, DOI: 10.1186/1471-2334-14-480. Accessed October 11, 2018.

Kaja A. SIR Epidemiological Model. [https://rpubs.com/kaja\\_a/201447](https://rpubs.com/kaja_a/201447) 2014. Accessed October 11, 2018.

Keeling MJ, Rohani P. *Modeling Infectious Diseases in Humans and Animals*. Princeton: Princeton University Press, 2008.

Miller Neilan RL, Schaefer E, Gaff H *et al*. Modeling Optimal Intervention Strategies for Cholera. *Bull Math Biol* 2010;72:2004–18.

Mukandavire Z, Liao S, Wang J *et al*. Estimating the reproductive numbers for the 2008-2009 cholera outbreaks in Zimbabwe. *Proc Natl Acad Sci U S A* 2011;108:8767–72.

Mukandavire Z, Smith DL, Morris Jr JG. Cholera in Haiti: Reproductive numbers and vaccination coverage estimates. *Sci Rep* 2013;3:997.

Otto SP, Day T. *A Biologist's Guide to Mathematical Modeling in Ecology and Evolution*. Princeton University Press, 2007.

R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. 2018. <https://www.R-project.org/>. Accessed October 11, 2018.

Sack DA. How many cholera deaths can be averted in Haiti? *Lancet (London, England)* 2011;377:1214–6.

Sanchez MA, Blower SM. Uncertainty and Sensitivity Analysis of the Basic Reproductive Rate: Tuberculosis as an Example. *Am J Epidemiol* 1997;145:1127–37.

Satsuma J, Willox R, Ramani A *et al*. Extending the SIR epidemic model. *Phys A Stat Mech its Appl* 2004;336:369–75.

Soetaert K, Petzoldt T, Setzer RW. Solving Differential Equations in *R*: Package deSolve. *J Stat Softw* 2010;33:1–25.

Stone L, Shulgin B, Agur Z. Theoretical examination of the pulse vaccination policy in the SIR epidemic model. *Math Comput Model* 2000;31:207–15.

Tuite AR, Tien J, Eisenberg M *et al*. Cholera Epidemic in Haiti, 2010: Using a Transmission Model to Explain Spatial Spread of Disease and Identify Optimal Control Interventions. *Ann Intern Med* 2011;154:593.

van den Driessche P, Watmough J. Further Notes on the Basic Reproduction Number. Springer, Berlin, Heidelberg, 2008, 159–78.

Vynnycky E, White RG. *An Introduction to Infectious Disease Modelling*. Oxford University Press, 2010.

Wallinga J, Lipsitch M. How generation intervals shape the relationship between growth rates and reproductive numbers. *Proceedings Biol Sci* 2007;274:599–604.

Wilson EB, Worcester J. The Law of Mass Action in Epidemiology: II. *Proc Natl Acad Sci U S A* 1945;31:109–16.

## Chapter 6

Bacaër N. Approximation of the Basic Reproduction Number  $R_0$  for Vector-Borne Diseases with a Periodic Vector Population. *Bull Math Biol* 2007;69:1067–91.

- Bacaër N, Guernaoui S. The epidemic threshold of vector-borne diseases with seasonality. *J Math Biol* 2006;53:421–36
- Ball F, Neal P. A general model for stochastic SIR epidemics with two levels of mixing. *Math Biosci* 2002;180:73–102.
- Bansal S, Grenfell BT, Meyers LA. When individual behaviour matters: homogeneous and network models in epidemiology. *J R Soc Interface* 2007;4:879–91.
- Basu S, Andrews JR, Poolman EM *et al.* Prevention of nosocomial transmission of extensively drug-resistant tuberculosis in rural South African district hospitals: an epidemiological modelling study. *Lancet* 2007;370:1500–7.
- Basu S, Friedland GH, Medlock J *et al.* Averting epidemics of extensively drug-resistant tuberculosis. *Proc Natl Acad Sci U S A* 2009;106:7672–7.
- Basu S, Stuckler D, Bitton A *et al.* Projected effects of tobacco smoking on worldwide tuberculosis control: mathematical modelling analysis. *BMJ* 2011;343:d5506.
- Bjorkman J, Hughes D, Andersson DI. Virulence of antibiotic-resistant *Salmonella typhimurium*. *Proc Natl Acad Sci* 1998;95:3949–53.
- Brauer F. Epidemic Models with Heterogeneous Mixing and Treatment. *Bull Math Biol* 2008;70:1869–85.
- Brauer F, Castillo-Chavez C. *Mathematical Models in Population Biology and Epidemiology*. Springer, 2012.
- Breda D, Diekmann O, de Graaf WF *et al.* On the formulation of epidemic models (an appraisal of Kermack and McKendrick). *J Biol Dyn* 2012;6:103–17.
- Castillo-Chávez C. *Mathematical Approaches for Emerging and Reemerging Infectious Diseases: An Introduction*. Springer, 2002.
- Castillo-Chavez C, Song B. Dynamical Models of Tuberculosis and Their Applications. *Math Biosci Eng* 2004;1:361–404.
- Dowdy DW, Chaisson RE, Maartens G *et al.* Impact of enhanced tuberculosis diagnosis in South Africa: a mathematical model of expanded culture and drug susceptibility testing. *Proc Natl Acad Sci U S A* 2008;105:11293–8.
- Dowdy DW, Chaisson RE, Moulton LH *et al.* The potential impact of enhanced diagnostic techniques for tuberculosis driven by HIV: a mathematical model. *AIDS* 2006;20:751–62.



Dye C, Garnett GP, Sleeman K *et al.* Prospects for worldwide tuberculosis control under the WHO DOTS strategy. *Lancet* 1998;352:1886–91.

Dye C, Williams BG. The population dynamics and control of tuberculosis. *Science* 2010;328:856–61.

Heffernan J, Smith R, Wahl L. Perspectives on the basic reproductive ratio. *Journal of the Royal Society Interface* 2005;2:281–93.

Isham V, Medley G, Infectious Human Diseases Workshop (1993 : Isaac Newton Institute for Mathematical Sciences). *Models for Infectious Human Diseases : Their Structure and Relation to Data*. Cambridge University Press, 1996.

Jacquez JA, Simon CP, Koopman J. Structured Mixing: Heterogeneous Mixing by the Definition of Activity Groups. Springer, Berlin, Heidelberg, 1989, 301–15.

Jenness SM, Goodreau SM, Morris M. EpiModel : An *R* Package for Mathematical Modeling of Infectious Disease over Networks. *J Stat Softw* 2018;84:1–47.

Joh E. WHO Tuberculosis Data & ggplot2 – Incidental Ideas. <https://incidental-ideas.org/2017/03/03/who-tuberculosis-data-ggplot2/>

Johnston GL, Smith DL, Fidock DA. Malaria’s missing number: calculating the human component of  $R_0$  by a within-host mechanistic model of Plasmodium falciparum infection and transmission. *PLoS Comput Biol* 2013;9:e1003025.

Kermack WO, McKendrick AG. A Contribution to the Mathematical Theory of Epidemics. *Proc R Soc A Math Phys Eng Sci* 1927;115:700–21.

Lindquist J, Ma J, van den Driessche P *et al.* Effective degree network disease models. *J Math Biol* 2011;62:143–64.

Mandal S, Sarkar R, Sinha S. Mathematical models of malaria - a review. *Malar J* 2011;10:202.

Martens W, Jetten T, Rotmans J *et al.* Climate change and vector-borne diseases: A global modelling perspective. *Glob Environ Chang* 1995;5:195–209.

McKee M, Stuckler D, Basu S. Addressing Institutional Amplifiers in the Dynamics and Control of Tuberculosis Epidemics. *Am J Trop Med Hyg* 2011;84:30–7.

Moreno Y, Pastor-Satorras R, Vespignani A. Epidemic outbreaks in complex heterogeneous networks. *Eur Phys J B* 2002;26:521–9.

Müller V. Discrete vs. continuous time models of malaria infections – Theoretical Biology | ETH Zurich.  
<http://www.tb.ethz.ch/education/learningmaterials/modelingcourse/level-2-modules/malaria.html> 2018. Accessed October 11, 2018.

Ngwa G., Shu W. A mathematical model for endemic malaria with variable human and mosquito populations. *Math Comput Model* 2000;32:747–63.

Pergantas P, Tsatsaris A, Malesios C *et al.* A spatial predictive model for malaria resurgence in central Greece integrating entomological, environmental and social data. Shiff C (ed.). *PLoS One* 2017;12:e0178836.

Porco TC, Blower SM. Quantifying the Intrinsic Transmission Dynamics of Tuberculosis. *Theor Popul Biol* 1998;54:117–32.

R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. 2018. <https://www.R-project.org/>. Accessed October 11, 2018.

Reiner RC, Perkins TA, Barker CM *et al.* A systematic review of mathematical models of mosquito-borne pathogen transmission: 1970-2010. *J R Soc Interface* 2013;10:20120921.

Salpeter EE, Salpeter SR. Mathematical Model for the Epidemiology of Tuberculosis, with Estimates of the Reproductive Number and Infection-Delay Function. *Am J Epidemiol* 1998;147:398–406.

Sattenspiel L, Dietz K. A structured epidemic model incorporating geographic mobility among regions. *Math Biosci* 1995;128:71–91.

Sharifi-Malvajerdi S, Zhu F. Malaria Parasite Clearance Rate Regression by bhrcr package. <https://cran.r-project.org/web/packages/bhrcr/vignettes/bhrcr-tutorial.html> 2018. Accessed October 11, 2018.

Silal SP, Little F, Barnes KI *et al.* Hitting a Moving Target: A Model for Malaria Elimination in the Presence of Population Movement. *PLoS One* 2015;10:e0144990.

Smart F. Power Analysis by Simulation: R, RCT, Malaria Example | R-bloggers. <https://www.r-bloggers.com/power-analysis-by-simulation-r-rct-malaria-example/>. Accessed October 11, 2018.

Vynnycky E, White RG. *An Introduction to Infectious Disease Modelling*. Oxford University Press, 2010.

Wei H-M, Li X-Z, Martcheva M. An epidemic model of a vector-borne disease with direct transmission and time delay. *J Math Anal Appl* 2008;342:895–908.

Woolhouse ME, Dye C, Etard JF *et al.* Heterogeneities in the transmission of infectious agents: implications for the design of control programs. *Proc Natl Acad Sci U S A* 1997;94:338–42.

## Chapter 7

Bai Z, Zhou Y. Threshold dynamics of a bacillary dysentery model with seasonal fluctuation. *Discret Contin Dyn Syst - Ser B* 2010;15:1–14.

Bailey R. Growing a Better Future: Food justice in a resource-constrained world. Oxfam Policy and Practice: Agriculture, Food and Land 2011;11:93–168.

Chaturvedi O, Masupe T, Masupe S. A Continuous Mathematical Model for Shigella Outbreaks. *Am J Biomed Eng* 2014;4:10–6.

Easton HG. Isolation in the control of dysentery. *Br Med J* 1973;1:798.

Gibson RS. *Principles of Nutritional Assessment*. Oxford University Press, 2005.

Greenhalgh D, Rana S, Samanta S *et al.* Awareness programs control infectious disease – Multiple delay induced mathematical model. *Appl Math Comput* 2015;251:539–63.

Joh RI, Hoekstra RM, Barzilay EJ *et al.* Dynamics of Shigellosis Epidemics: Estimating Individual-Level Transmission and Reporting Rates From National Epidemiologic Data Sets. *Am J Epidemiol* 2013;178:1319–26.

Kikafunda JK, Walker AF, Collett D *et al.* Risk factors for early childhood malnutrition in Uganda. *Pediatrics* 1998;102:E45.

Koethe JR, Marseille E, Giganti MJ *et al.* Estimating the cost-effectiveness of nutrition supplementation for malnourished, HIV-infected adults starting antiretroviral therapy in a resource-constrained setting. *Cost Eff Resour Alloc* 2014;12:10.

Mew E, Godden K. Malnutrition. *Disaster Medicine*. London: Springer London, 2013, 309–23.

Nie L, Teng Z, Torres A. Dynamic analysis of an SIR epidemic model with state dependent pulse vaccination. *Nonlinear Anal Real World Appl* 2012;13:1621–9.

R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. 2018. <https://www.R-project.org/>. Accessed October 11, 2018.

Takaguchi T, Masuda N, Holme P. Bursty Communication Patterns Facilitate Spreading in a Threshold-Based Epidemic Dynamics. Barrat A (ed.). *PLoS One* 2013;8:e68629.

## Chapter 8

Amara AH, Aljunid SM. Noncommunicable diseases among urban refugees and asylum-seekers in developing countries: a neglected health care need. *Global Health* 2014;10:24.

Basu S, Landon BE, Song Z *et al.* Implications of Workforce and Financing Changes for Primary Care Practice Utilization, Revenue, and Cost. *Med Care* 2015;53:125–32.

Basu S. Microsimulation. In: El-Sayed A, Galea S (eds.). *Systems Science and Population Health*. New York: Oxford University Press, 2017, 99–112.

Basu S, Millett C, Vijan S *et al.* The Health System and Population Health Implications of Large-Scale Diabetes Screening in India: A Microsimulation Model of Alternative Approaches. Bell D (ed.). *PLOS Med* 2015;12:e1001827.

Carstensen B, Plummer M, Laara E. *Epi: A Package for Statistical Analysis in Epidemiology*, 2018. <https://cran.r-project.org/web/packages/Epi/index.html>. Accessed October 11, 2018.

Caruana R, Karampatziakis N, Yessenalina A. An empirical evaluation of supervised learning in high dimensions. In: *Proceedings of the 25th International Conference on Machine Learning - ICML '08*. ; 2008:96-103.

Colchero MA, Popkin BM, Rivera JA *et al.* Beverage purchases from stores in Mexico under the excise tax on sugar sweetened beverages: observational study. *BMJ* 2016;352:h6704.

Colchero MA, Rivera-Dommarco J, Popkin BM *et al.* In Mexico, Evidence Of Sustained Consumer Response Two Years After Implementing A Sugar-Sweetened Beverage Tax. *Health Aff* 2017;36:564–71.

Bengtsson H. *MatrixStats: Functions That Apply to Rows and Columns of Matrices (and to Vectors)*, 2017.

<https://cran.rstudio.com/web/packages/matrixStats/index.html>. Accessed October 11, 2018.

Kelley K. Confidence Intervals for Standardized Effect Sizes: Theory, Application, and Implementation. *J Stat Softw* 2007;20, DOI: 10.18637/jss.v020.i08.

Kelley K. *MBESS (Version 4.0.0 and Higher) [Computer Software and Manual]*, 2017. <https://cran.r-project.org/web/packages/MBESS/index.html>. Accessed October 11, 2018.

Kelley K. Methods for the Behavioral, Educational, and Social Sciences: An R package. *Behav Res Methods* 2007;39:979–84.

Khader A, Ballout G, Shahin Y *et al*. Diabetes mellitus and treatment outcomes in Palestine refugees in UNRWA primary health care clinics in Jordan. *Public Heal Action* 2013;3:259–64.

Khader A, Ballout G, Shahin Y *et al*. What happens to Palestine refugees with diabetes mellitus in a primary healthcare centre in Jordan who fail to attend a quarterly clinic appointment? *Trop Med Int Heal* 2014;19:308–12.

Khader A, Farajallah L, Shahin Y *et al*. Cohort monitoring of persons with diabetes mellitus in a primary healthcare clinic for Palestine refugees in Jordan. *Trop Med Int Heal* 2012;17:1569–76.

Müller B, Bohn F, Dreßler G *et al*. Describing human decisions in agent-based models—ODD+ D, an extension of the ODD protocol. *Environmental Modelling & Software* 2013;48:37–48.

Norton JA, Bass FM. A Diffusion Theory Model of Adoption and Substitution for Successive Generations of High-Technology Products. *Manage Sci* 1987;33:1069–86.

R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. 2018. <https://www.R-project.org/>. Accessed October 11, 2018.

Ripley B, Venables B, Bates DM, Hornik K, Gebhardt A, Firth D. MASS: Support Functions and Datasets for Venables and Ripley's MASS. <https://cran.r-project.org/web/packages/MASS/index.html>. Accessed October 11, 2018.

Schelling TC. Models of segregation. *The American Economic Review* 1969;59:488–93.

Shahin Y, Kapur A, Khader A *et al*. Clinical Audit on the Provision of Diabetes Care in the Primary Care Setting by United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA). *J Diabetes Mellit* 2015;05:12–20.

Shahin Y, Kapur A, Seita A. Diabetes care in refugee camps: The experience of UNRWA. *Diabetes Res Clin Pract* 2015;108:1–6.

Venables WN, Ripley BD, Venables WN. *Modern Applied Statistics with S*. New York: Springer, 2003.

Yusef JI. Management of diabetes mellitus and hypertension at UNRWA primary health care facilities in Lebanon. *East Mediterr Health J* 2000;6:378–90.

## Chapter 9

Athey S, Imbens G. Recursive partitioning for heterogeneous causal effects. *Proc Natl Acad Sci U S A*. 2016;113:7353–7360.

Basu S, Faghmous J, Doupe P. Machine Learning Methods for Precision Medicine Research Designed to Reduce Health Disparities: A Structured Tutorial. *Ethnicity & Disease*. 2018; in press.

Boulesteix AL. Ten simple rules for reducing overoptimistic reporting in methodological computational research. *PLoS Comput Biol*. 2015;11.

Breiman L. Random Forests. *Mach Learn*. 2001;45(1):5–32.

Cai M, Shi Y, Liu J. Deep maxout neural networks for speech recognition. In: *2013 IEEE Workshop on Automatic Speech Recognition and Understanding, ASRU 2013 - Proceedings*. ; 2013:291–296.

Caruana R, Niculescu-Mizil A. An empirical comparison of supervised learning algorithms. *Proc 23rd Int Conf Mach Learn*. 2006; 161–168.

Choi E, Bahadori MT, Schuetz A, Stewart WF, Sun J. Doctor AI: Predicting Clinical Events via Recurrent Neural Networks. 2015. <http://arxiv.org/abs/1511.05942>. Accessed June 19, 2018.

Cook D. *Practical Machine Learning with H2O - O'Reilly Media*. O'Reilly Media, 2016.

Diamon A, Sekhon JS. Genetic Matching for Estimating Causal Effects: A General Multivariate Matching Method for Achieving Balance in Observational Studies. *Review of Economics and Statistics*. 2013; 95: 932–945

- Doupe P, Faghmous J, Basu S. Machine Learning for Health Services Researchers. *Value in Health*, 2018: in press.
- Faghmous J. Machine Learning. In: El-Sayed AM, Galea S, eds. *Systems Science and Population Health*. New York: Oxford University Press; 2017.
- Friedman JH. Greedy function approximation: A gradient boosting machine. *Ann Stat*. 2001;29:1189-1232.
- Friedman JH. Stochastic gradient boosting. *Comput Stat Data Anal*. 2002;38:367-378.
- Friedman J, Hastie T, Tibshirani R. Additive logistic regression: A statistical view of boosting. *Ann Stat*. 2000;28:337-407.
- Friedman J, Hastie T, Tibshirani R. Regularization Paths for Generalized Linear Models via Coordinate Descent. *J Stat Softw*. 2010;33(1).
- Gedeon TD. Data mining of inputs: analysing magnitude and functional measures. *Int J Neural Syst* 1997;8:209–18.
- Goldberg Y, Levy O. word2vec Explained: deriving Mikolov et al.’s negative-sampling word-embedding method. 2014. <http://arxiv.org/abs/1402.3722>. Accessed June 19, 2018.
- H2O.ai. H2O 3.20.0.9 documentation. 2018. <http://docs.h2o.ai/h2o/latest-stable/h2o-docs/index.html>. Accessed October 11, 2018.
- Hastie T, Tibshirani R, Friedman J. *The Elements of Statistical Learning: Data Mining, Inference, and Prediction*. 2nd editio. New York: Springer; 2011.
- Hinton GE, Srivastava N, Krizhevsky A *et al*. Improving neural networks by preventing co-adaptation of feature detectors. 2012. <https://arxiv.org/abs/1207.0580>. Accessed October 11, 2018.
- Hosmer DW, Lemeshow S. *Applied Logistic Regression Second Edition*; Wiley: 2004.
- Hothorn T, Hornik K, Zeileis A. Unbiased Recursive Partitioning: A Conditional Inference Framework. *Journal of Computational and Graphical Statistics*, 2006;15:651-674.
- Ioannidis JPA. Acknowledging and Overcoming Nonreproducibility in Basic and Preclinical Research. *JAMA*. 2017;317:1019.
- Kachuee M, Fazeli S, Sarrafzadeh M. ECG Heartbeat Classification: A Deep Transferable Representation. 2018. <http://arxiv.org/abs/1805.00794>. Accessed June 19, 2018.

Kambayashi Y, Winiwarter W, Arikawa M *et al.* *Data Warehousing and Knowledge Discovery: 4th International Conference, DaWaK 2002, Aix-En-Provence, France, September 4-6, 2002*. Springer, 2002.

Krizhevsky A, Sutskever I, Hinton GE. ImageNet Classification with Deep Convolutional Neural Networks. 2012. <http://papers.nips.cc/paper/4824-imagenet-classification-with-deep-convolutional-neural-networks>. Accessed June 19, 2018.

Kuhn M. caret: Classification and Regression Training. R package version 6.0-80. <https://CRAN.R-project.org/package=caret>. 2018. Accessed October 11, 2018.

Larsen WA, McCleary SJ. The Use of Partial Residual Plots in Regression Analysis. *Technometrics*. 1972;14:781-790.

LeDell E. h2o-stacked-ensemble-demo.R. 2018. <https://gist.github.com/ledell/102a24eef72bdc4ea2cd876492095684>. Accessed October 11, 2018.

LeDell E. SLDM IV: Deep Learning in H2O. 2016. <https://github.com/ledell/sldm4-h2o/blob/master/sldm4-deeplearning-h2o.Rmd>. Accessed October 11, 2018.

LeDell E, Gill N, Aiello S, Fu A, Candel A, Click C, Kraljevic T, Nykodym T, Aboyoun P, Kurka M, Malohlava M. h2o: R Interface for 'H2O'. R package version 3.20.0.8. <https://CRAN.R-project.org/package=h2o>. 2018. Accessed October 11, 2018.

Lu Y, Kim SS-MS, Hovy E, et al. Improving neural networks by preventing co-adaptation of feature detectors. *Proc 30th Conf Artif Intell (AAAI 2016)*. 2016;48:1-9.

Luo W, Phung D, Tran T, et al. Guidelines for developing and reporting machine learning predictive models in biomedical research: A multidisciplinary view. *J Med Internet Res*. 2016;18.

Niu F, Recht B, Re C *et al.* HOGWILD!: A Lock-Free Approach to Parallelizing Stochastic Gradient Descent. 2011. <https://arxiv.org/abs/1106.5730>. Accessed October 11, 2018.

Parmar V, Candel A. *Deep Learning Booklet by H2O.Ai*. H2O, 2015.

Poole S, Grannis S, Shah NH. Predicting Emergency Department Visits. *AMIA Summits Transl Sci Proc*. 2016;20:438-445.

Quinlan JR. Induction of Decision Trees. *Mach Learn*. 1986;1:81-106.



R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. 2018. <https://www.R-project.org/>. Accessed October 11, 2018.

Rigdon J, Baiocchi M, Basu S. Preventing false discovery of heterogeneous treatment effect subgroups in randomized trials. *Trials* 2018;19:382.

Schmidhuber J. Deep Learning in neural networks: An overview. *Neural Networks*. 2015;61:85-117.

Sekhon JS. Multivariate and Propensity Score Matching Software with Automated Balance Optimization: The Matching Package for R. *J Stat Soft* 2011;42:1-52.

Sekhon JS, Grieve RD. A Matching Method For Improving Covariate Balance in Cost-Effectiveness Analyses. *Health Economics*, 2012;21:695-714.

Steyerberg EW, Vickers AJ, Cook NR, et al. Assessing the performance of prediction models: a framework for traditional and novel measures. *Epidemiology*. 2010;21(1):128-138.

Strobl C, Boulesteix A-L, Kneib T, Augustin T, Zeileis A. Conditional Variable Importance for Random Forests. *BMC Bioinformatics*. 2008;9:307.

Sutskever I, Martens J, Dahl G *et al*. On the importance of initialization and momentum in deep learning. Proceedings of the 30th International Conference on Machine Learning, PMLR, 2013;28:1139-1147.

Tanwani AK, Afridi J, Shafiq MZ, Farooq M. Guidelines to select machine learning scheme for classification of biomedical datasets. In: *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*. 2009; 5483:128-139.

Van der Laan MJ, Polley EC, Hubbard AE. Super learner. *Stat Appl Genet Mol Biol*. 2007;6.

Wager S, Wang S, Liang P. Dropout Training as Adaptive Regularization. 2013. <https://arxiv.org/abs/1307.1493>. Accessed October 11, 2018.

Wickham H, Hester J, Francois R. readr: Read Rectangular Text Data. R package version 1.1.1. 2017. <https://CRAN.R-project.org/package=readr>. Accessed October 11, 2018.

Xiao C, Choi E, Sun J. Opportunities and challenges in developing deep learning models using electronic health records data: a systematic review. *J Am Med Informatics Assoc*. 2018; epub ahead of print.

Zeiler MD. ADADELTA: An Adaptive Learning Rate Method. 2012. <https://arxiv.org/abs/1212.5701>. Accessed October 11, 2018.

## Chapter 10

Basu S, Landon BE, Williams JW *et al*. Behavioral Health Integration into Primary Care: a Microsimulation of Financial Implications for Practices. *J Gen Intern Med* 2017;32:1330–41.

H2O.ai. H2O 3.20.0.9 documentation. 2018. <http://docs.h2o.ai/h2o/latest-stable/h2o-docs/index.html>. Accessed October 11, 2018.

Kuhn M. caret: Classification and Regression Training. R package version 6.0-80. <https://CRAN.R-project.org/package=caret>. 2018. Accessed October 11, 2018.

LeDell E, Gill N, Aiello S, Fu A, Candel A, Click C, Kraljevic T, Nykodym T, Aboyoun P, Kurka M, Malohlava M. h2o: R Interface for 'H2O'. R package version 3.20.0.8. <https://CRAN.R-project.org/package=h2o>. 2018. Accessed October 11, 2018.

R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. 2018. <https://www.R-project.org/>. Accessed October 11, 2018.

Wickham H, Hester J, Francois R. readr: Read Rectangular Text Data. R package version 1.1.1. 2017. <https://CRAN.R-project.org/package=readr>. Accessed October 11, 2018.

## Chapter 11

Andrews JR, Basu S. Transmission dynamics and control of cholera in Haiti: an epidemic model. *The Lancet* 2011;377:1248–55.

Andrews JR, Wood R, Bekker L-G *et al*. Projecting the benefits of antiretroviral therapy for HIV prevention: the impact of population mobility and linkage to care. *Journal of Infectious Diseases* 2012;206:543–51.

Basu S, Andrews J. Complexity in Mathematical Models of Public Health Policies: A Guide for Consumers of Models. *PLoS Med* 2013; 10(10): e1001540.

Basu S, Chapman GB, Galvani AP. Integrating epidemiology, psychology, and economics to achieve HPV vaccination targets. *Proceedings of the National Academy of*

*Sciences* 2008;105:19018–23.

Basu S, Galvani AP. Re:“Multiparameter calibration of a natural history model of cervical cancer.” *American journal of epidemiology* 2007;166:983–983.

Basu S, Stuckler D, Bitton A *et al.* Projected effects of tobacco smoking on worldwide tuberculosis control: mathematical modelling analysis. *Bmj* 2011;343:d5506.

Bolker BM. *Ecological Models and Data in R*. Princeton: Princeton University Press, 2008.

Blower SM, Dowlatabadi H. Sensitivity and uncertainty analysis of complex models of disease transmission: an HIV model, as an example. *International Statistical Review/Revue Internationale de Statistique* 1994:229–43.

Bortz D, Nelson P. Model selection and mixed-effects modeling of HIV infection dynamics. *Bulletin of mathematical biology* 2006;68:2005–25.

Eaton JW, Johnson LF, Salomon JA *et al.* HIV treatment as prevention: systematic comparison of mathematical models of the potential impact of antiretroviral therapy on HIV incidence in South Africa. *PLoS Med* 2012;9:e1001245.

Eyles H, Mhurchu CN, Nghiem N *et al.* Food pricing strategies, population diets, and non-communicable disease: a systematic review of simulation studies. *PLoS Med* 2012;9:e1001353.

Grimm V, Berger U, DeAngelis DL *et al.* The ODD protocol: a review and first update. *Ecological modelling* 2010;221:2760–8.

May RM. Uses and abuses of mathematics in biology. *Science* 2004;303:790–3.

Pilcher CD, Christopoulos KA, Golden M. Public health rationale for rapid nucleic acid or p24 antigen tests for HIV. *Journal of Infectious Diseases* 2010;201:S7–15.

Pinkerton SD. Probability of HIV transmission during acute infection in Rakai, Uganda. *AIDS and Behavior* 2008;12:677–84.

Powers KA, Ghani AC, Miller WC *et al.* The role of acute and early HIV infection in the spread of HIV and implications for transmission prevention strategies in Lilongwe, Malawi: a modelling study. *The Lancet* 2011;378:256–68.

Rahmandad H, Sterman JD. Reporting guidelines for simulation-based research in social sciences. *System Dynamics Review* 2012;28:396–411.

Rinaldo A, Blokes M, Beruzzo E *et al.* A transmission model of the 2010 cholera

epidemic in Haiti. *Ann Intern Med* 2011;155:403–4.

Steward WT, Remien RH, Higgins JA *et al.* Behavior change following diagnosis with acute/early HIV infection—a move to serosorting with other HIV-infected individuals. The NIMH Multisite Acute HIV Infection Study: III. *AIDS and Behavior* 2009;13:1054–60.

Suthar AB, Lawn SD, del Amo J *et al.* Antiretroviral therapy for prevention of tuberculosis in adults with HIV: a systematic review and meta-analysis. *PLoS Med* 2012;9:e1001270.

Toni T, Welch D, Strelkowa N *et al.* Approximate Bayesian computation scheme for parameter inference and model selection in dynamical systems. *Journal of the Royal Society Interface* 2009;6:187–202.

Tuite AR, Tien J, Eisenberg M *et al.* Cholera epidemic in Haiti, 2010: using a transmission model to explain spatial spread of disease and identify optimal control interventions. *Annals of internal medicine* 2011;154:593–601.