

**MATHEMATICS OF THE
TRANSMISSION DYNAMICS AND CONTROL
OF THE 2019 NOVEL CORONAVIRUS**

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- [1] S. J. BROZAK, B. PANT, S. SAFDAR, and A. B. GUMEL, Dynamics of COVID-19 pandemic in India and Pakistan: a metapopulation modelling approach, *Infect. Dis. Model.* **6** (2021), 1173–1201. doi: 10.1016/j.idm.2021.10.001.
- [2] L. EDELSTEIN-KESHET, *Mathematical models in biology*, Random House/Birkhäuser Mathematics Series, Random House, New York, NY, 1988, ISBN 0-394-35507-5; Reprinted with errata and a guide to more recent literature in Classics in Applied Mathematics **46**, by the Society for Industrial and Applied Mathematics, Philadelphia, PA, 2005, ISBN 978-0-89871-554-5; 978-0-89871-914-7. MR 1010228. Zbl 1100.92001. doi: 10.1137/1.9780898719147.
- [3] S. E. EIKENBERRY, M. MANCUSO, E. IBOI, T. PHAN, K. EIKENBERRY, Y. KUANG, E. KOSTELICH, and A. B. GUMEL, To mask or not to mask: modeling the potential for face mask use by the general public to curtail the COVID-19 pandemic, *Infectious Disease Modelling* **5** (2020), 293–308. doi: 10.1016/j.idm.2020.04.001.
- [4] E. H. ELBASHA and A. B. GUMEL, Vaccination and herd immunity thresholds in heterogeneous populations, *J. Math. Biol.* **83** (2021), no. 6–7, Article #73. MR 4349464. Zbl 1480.92125. doi: 10.1007/s00285-021-01686-z.
- [5] A. B. GUMEL, E. A. IBOI, C. N. NGONGHALA, and E. H. ELBASHA, A primer on using mathematics to understand COVID-19 dynamics: Modeling, analysis and simulations, *Infect. Dis. Model.* **6** (2021), 148–168. doi: 10.1016/j.idm.2020.11.005.
- [6] A. B. GUMEL, E. A. IBOI, C. N. NGONGHALA, and G. H. NGWA, Toward achieving a vaccine-derived herd immunity threshold for COVID-19 in the US, *Front. Pub. Hlth.* **9** (2021), 1110–1134. doi: 10.3389/fpubh.2021.709369.
- [7] E. A. IBOI, C. N. NGONGHALA, and A. B. GUMEL, Will an imperfect vaccine curtail the COVID-19 pandemic in the US?, *Infect. Dis. Model.* **5** (2020), 510–524. doi: 10.1016/j.idm.2020.07.006.
- [8] E. A. IBOI, O. SHAROMI, C. N. NGONGHALA, and A. B. GUMEL, Mathematical modeling and analysis of COVID-19 pandemic in Nigeria, *Math. Biosci. Eng.* **17** (2020), no. 6, 7192–7220. MR 4196935. Zbl 1471.92317. doi: 10.3934/mbe.2020369.
- [9] M. MANCUSO, S. E. EIKENBERRY, and A. B. GUMEL, Will vaccine-derived protective immunity curtail COVID-19 variants in the US?, *Infect. Dis. Model.* **6** (2021), 1110–1134. doi: 10.1016/j.idm.2021.08.008.
- [10] M. MARTCHEVA, *An introduction to mathematical epidemiology*, Texts in Applied Mathematics **61**, Springer, New York, NY, 2015, ISBN 978-1-4899-7611-6; 978-1-4899-7612-3. MR 3409181. Zbl 1333.92006. doi: 10.1007/978-1-4899-7612-3.

- [11] C. N. NGONGHALA, E. IBOI, S. EIKENBERRY, M. SCOTCH, C. R. MACINTYRE, M. H. BONDS, and A. B. GUMEL, Mathematical assessment of the impact of non-pharmaceutical interventions on curtailing the 2019 novel Coronavirus, *Math. Biosci.* **325** (2020), Article #108364. MR 4097986. Zbl 1448.92135. doi: 10.1016/j.mbs.2020.108364.
- [12] C. N. NGONGHALA, E. A. IBOI, and A. B. GUMEL, Could masks curtail the post-lockdown resurgence of COVID-19 in the US?, *Math. Biosci.* **329** (2020), Article #108452. MR 4143540. Zbl 1453.92193. doi: 10.1016/j.mbs.2020.108452.
- [13] C. N. NGONGHALA, J. R. KNITTER, L. MARINACCI, M. H. BONDS, and A. B. GUMEL, Assessing the impact of widespread respirator use in curtailing COVID-19 transmission in the USA, *R. Soc. Open Sci.* **8** (2021), no. 9, Article #210699. doi: 10.1098/rsos.210699.
- [14] L. PERKO, *Differential equations and dynamical systems*, 3rd ed., Texts in Applied Mathematics **7**, Springer, New York, NY, 2001, ISBN 0-387-95116-4. MR 1801796. Zbl 0973.34001. doi: 10.1007/978-1-4613-0003-8.
- [15] S. H. STROGATZ, *Nonlinear dynamics and chaos: with applications to physics, biology, chemistry, and engineering*, 2nd ed., Westview Press, Boulder, CO, 2015, Reprinted by CRC Press, Boca Raton, FL, 2018, ISBN 978-0-8133-4910-7. MR 3837141. Zbl 1343.37001. doi: 10.1201/9780429399640.
- [16] S. WIGGINS, *Introduction to applied nonlinear dynamical systems and chaos*, 2nd ed., Texts in Applied Mathematics **2**, Springer, New York, NY, 2003, ISBN 0-387-00177-8. MR 2004534. Zbl 1027.37002. doi: 10.1007/b97481.