

MATH / PUBH-EPI 5421
Homework #2 – Supplemental Problem

P2.1. (Estimating \mathcal{R}_0 for Ebola in Sierra Leone.) Weekly Ebola incidence data for Sierra Leone are given in `sierra_leone.csv` (source: WHO website, <http://apps.who.int/gho/data/view ebola-sitrep ebola-country-SLE-20150218-graph?lang=en>). Estimate the initial growth rate for the outbreak. Use this in turn to estimate \mathcal{R}_0 . For this, you will need information about the generation interval of Ebola. A starting point is a reported symptom onset to symptom onset time of 16.1 ± 4.4 days reported in a contact tracing study by Maganga et al [2]. Additional information on the natural history of Ebola can be found in Chowell and Nishiura ([1]; e.g. Table 1).

References

- [1] G. Chowell and H. Nishiura. Transmission dynamics and control of Ebola virus disease (EVD): a review. *BMC Medicine*, 12:196, 2014.
- [2] G. D. Maganga, J. Kapetshi, N. Berthet, B. Kebela Ilunga, F. Kabange, P. Mbala Kingebeni, V. Mondonge, J. J. Muyembe, E. Bertherat, S. Briand, J. Cabore, A. Epelboin, P. Formenty, G. Kobinger, L. Gonzalez-Angulo, I. Labouba, J. C. Manuguerra, J. M. Okwo-Bele, C. Dye, and E. M. Leroy. Ebola virus disease in the Democratic Republic of Congo. *New England Journal of Medicine*, 371(22):2083–2091, 2014.