

HMS 581 Final Project

Modeling Measles in New York & Vermont

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ABSTRACT. We model the spread of the measles pathogen in New York and Vermont from **START_DATE** to **END_DATE** using an SIR model. Our model has been augmented from a basic SIR model to incorporate annual seasonality, births and deaths, and a multi-year seasonality term for the strength of the strain of the pathogen. To optimize and fit our model, we adapted to python, the R implementation of particle MCMC provided to us.

1. INTRODUCTION

TODO: be brief

2. MODEL AUGMENTATIONS

2.1. **Seasonality.**

2.2. **Birth Deaths.**

2.3. **Pathogen Strength (Multi-year oscillations).**

3. MODEL FITTING

TODO: Sumarize pMCMC

4. RESULTS

TODO: Plots

5. CONCLUSION

TODO: summarize, discuss possible future work

ACKNOWLEDGEMENTS

TODO: One or two sentences

APPENDIX A. BEST FIT STATISTICS

TODO: make a table of best fit parameters

APPENDIX B. CODE

TODO: Link to the github page with the code