CODECHECK certificate 2020-012

https://doi.org/10.5281/zenodo.3893617

Item	Value
Title	Report 23: State-level tracking of COVID-19 in the United States version 2 (28-05-2020)
Authors	H Juliette T Unwin, Swapnil Mistra, Valerie C Bradley, et al.
Reference	https://dx.doi.org/10.25561/79231
Codechecker	Stephen J. Eglen
Date of check	2020-06-14 14:00:00
Summary	R code for this paper shared with an earlier codecheck certifice (2020-011) from the same codebase.
Repository	https://github.com/sje30/covid19model-report23

Table 1: CODECHECK summary

Summary

This code was (not) straightforward to codecheck. [... ADD MORE INTERESTING FINDINGS HERE..]

Output	Comment	Size (b)
usa/figures/rt_point__1006697.pdf	manuscript Figure 4. In the manuscript the states are ordered by average R_t value.	10841
usa/figures/1006697_rt_map_choropleth.pdf	manuscript Figure 5	77748
usa/figures/WA_three_panel_1006697.pdf	manuscript Figure 6 (Washington)	15409
usa/figures/NY_three_panel_1006697.pdf	manuscript Figure 6 (New York)	14703
usa/figures/MA_three_panel_1006697.pdf	manuscript Figure 6 (Massachusetts)	14472
usa/figures/FL_three_panel_1006697.pdf	manuscript Figure 6 (Florida)	14642
usa/figures/CA_three_panel_1006697.pdf	manuscript Figure 6 (California)	14798
usa/figures/1006697_infectiousness_regions.pdf	manuscript Figure 7	38005
usa/figures/WA_scenarios_56_0_20_40_1006697_figure8.pdf	manuscript Figure 8 (Washington)	10032
usa/figures/NY_scenarios_56_0_20_40_1006697_figure8.pdf	manuscript Figure 8 (New York)	10582
usa/figures/MA_scenarios_56_0_20_40_1006697_figure8.pdf	manuscript Figure 8 (Massachusetts)	10432
usa/figures/FL_scenarios_56_0_20_40_1006697_figure8.pdf	manuscript Figure 8 (Florida)	10039
usa/figures/CA_scenarios_56_0_20_40_1006697_figure8.pdf	manuscript Figure 8 (California)	10052

Table 2: Summary of output files generated

CODECHECKER notes

The github repository was cloned, and renamed to "covid19model-report23". This reproduction was performed after finishing the related certificate 2020-010; details of setting up the R environment are described in that certificate.

Two extra problems though... geofacet and rgdal which needed system libraries to install. Once the sysadmin had installed extra libraries for unitdevs2 and gdal, I needed to run the module

```
module load ./gdal-2.1.2
```

```
install.packages("rgdal")
install.packages("geofacet")
install.packages("denstrip") #for plotting
```

An initial run of the FULL model didn't work because I had an older version of rstan package; this was upgraded to 2.19.3.

SUGGEST: add a list of the r packages required, and their versions, in the covid19model repository.

the simulations were thus run by running the simulation directly on a workstation:

```
time Rscript base-usa.r
```

Running the test mode took 41 minutes and generated outputs.

```
time Rscript base-usa.r -F
```

Compared to the Certificate 2020-010, this was estimated to run in about 6 hours.

1006697 is job number [2020-06-16 Tue]

final run time was 1020 minutes (17 hours).

The code for reproducing figures 1,2 and 3 was not available in the repository.

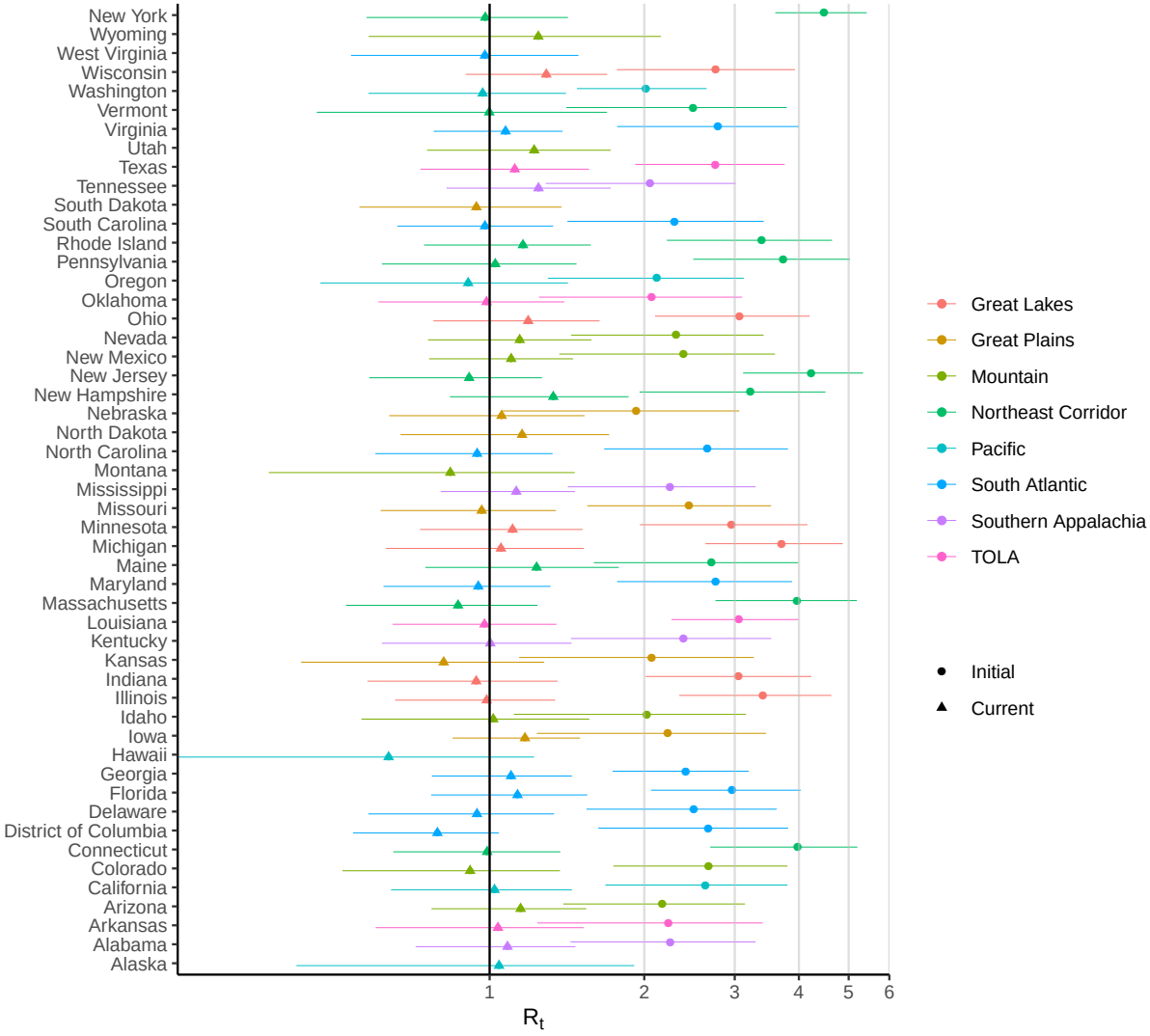

Figure C1: manuscript Figure 4. In the manuscript the states are ordered by average R_t value.

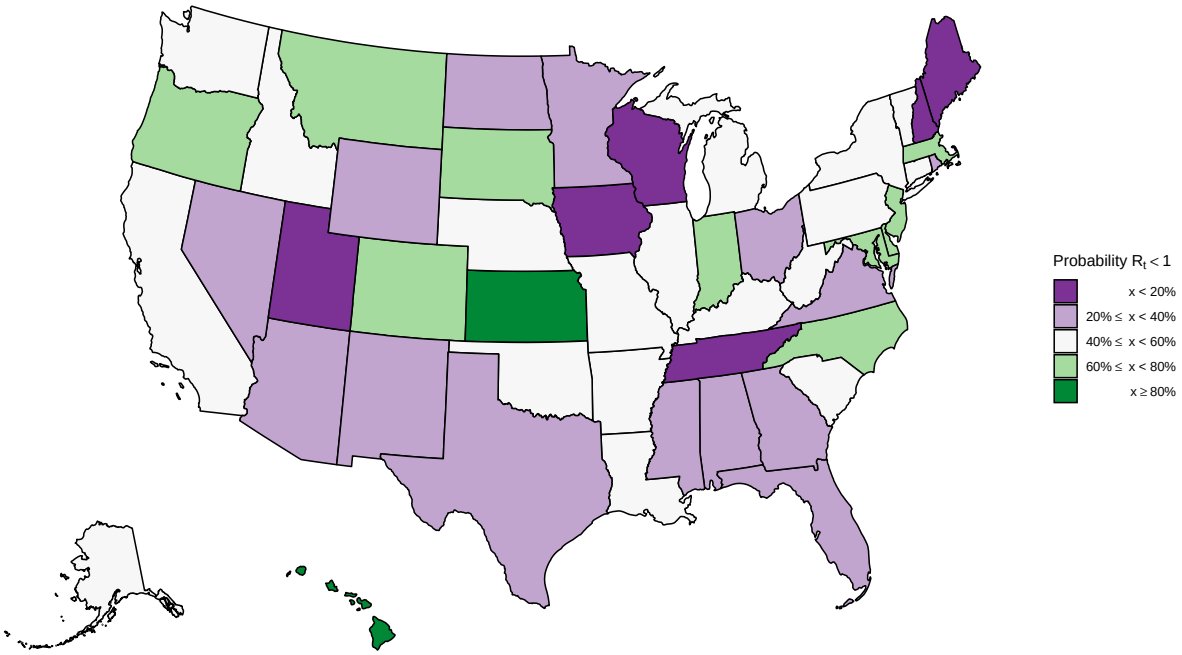

Figure C2: manuscript Figure 5

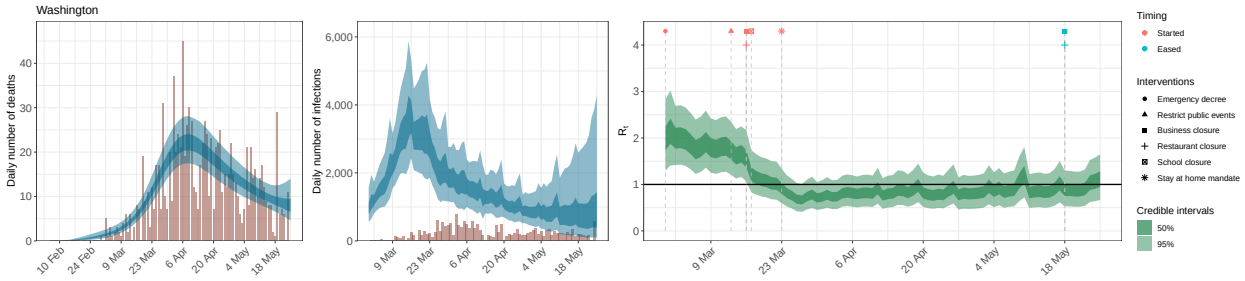

Figure C3: manuscript Figure 6 (Washington)

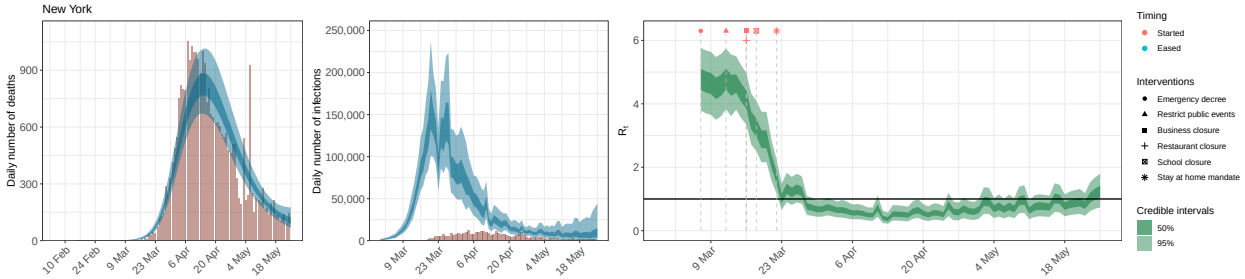

Figure C4: manuscript Figure 6 (New York)

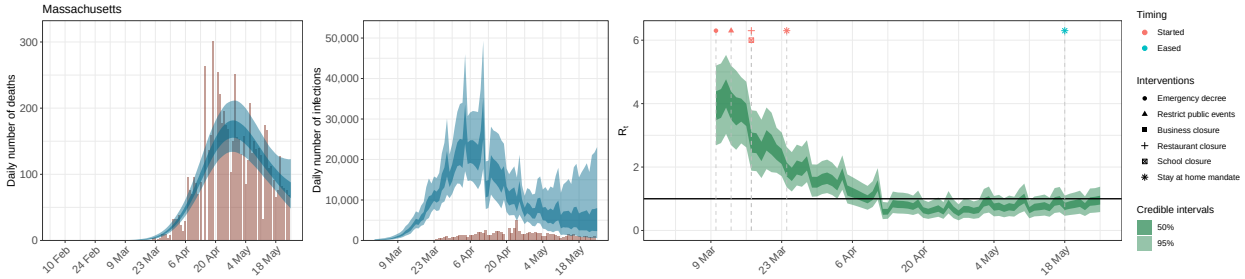

Figure C5: manuscript Figure 6 (Massachusetts)

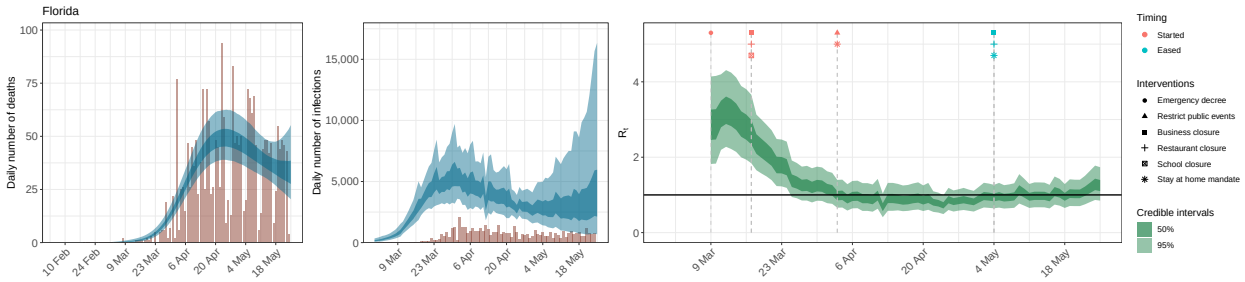

Figure C6: manuscript Figure 6 (Florida)

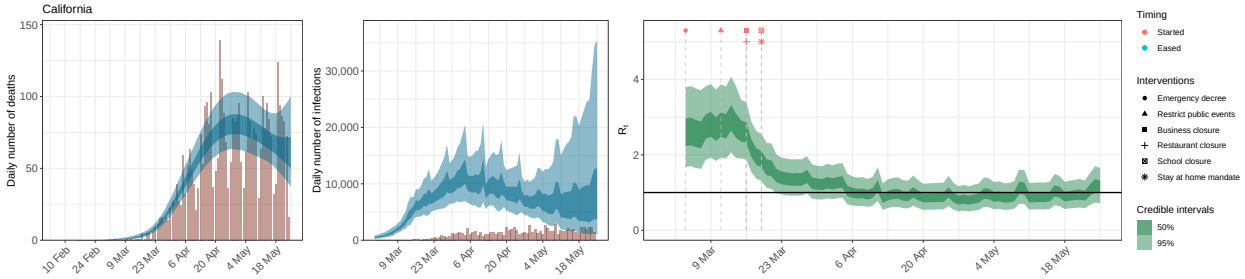

Figure C7: manuscript Figure 6 (California)

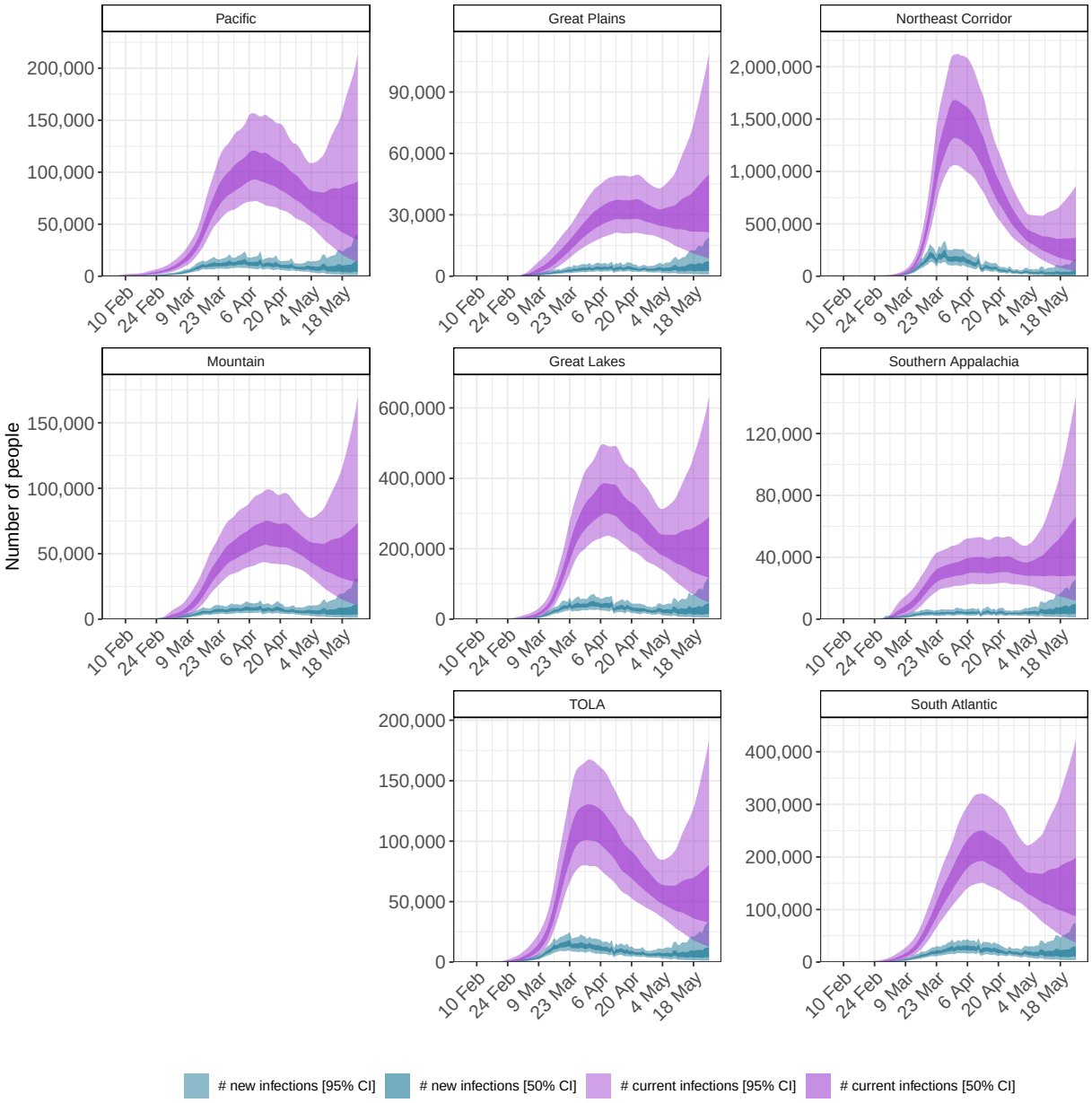

Figure C8: manuscript Figure 7

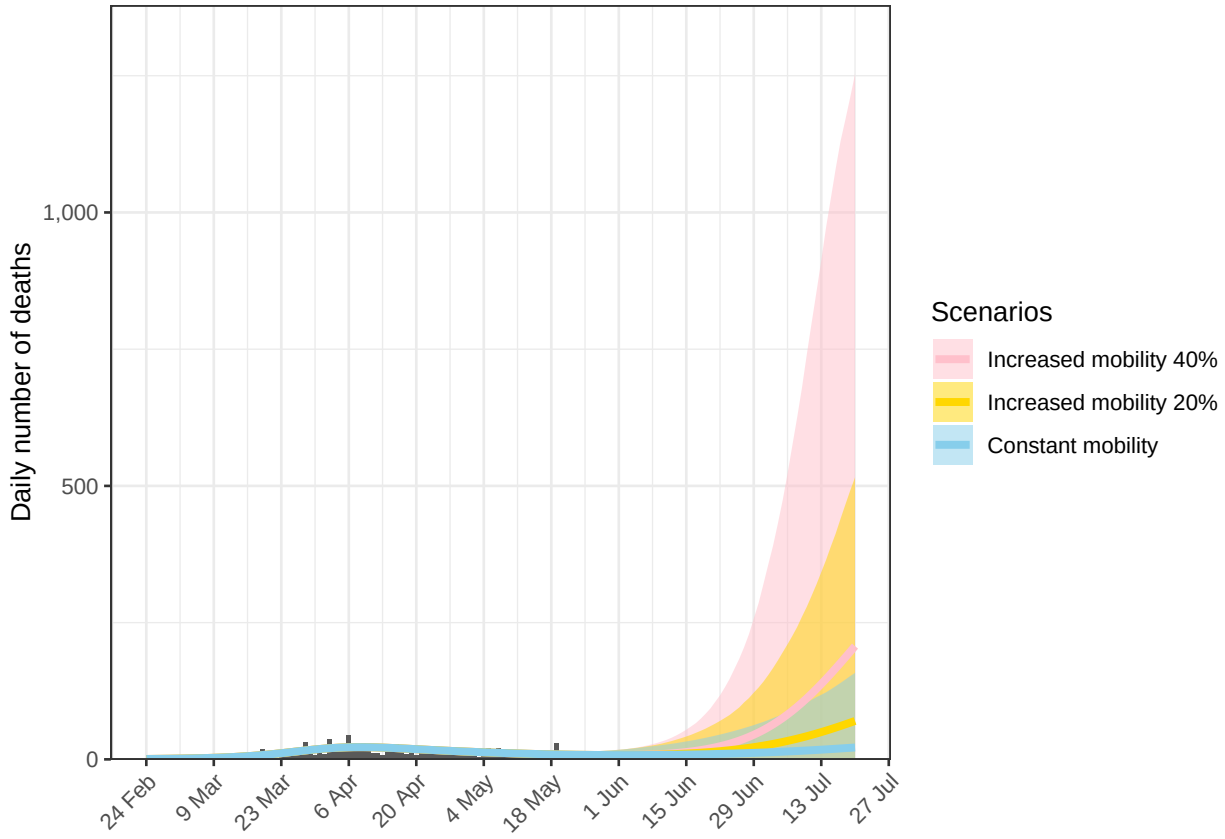

Figure C9: manuscript Figure 8 (Washington)

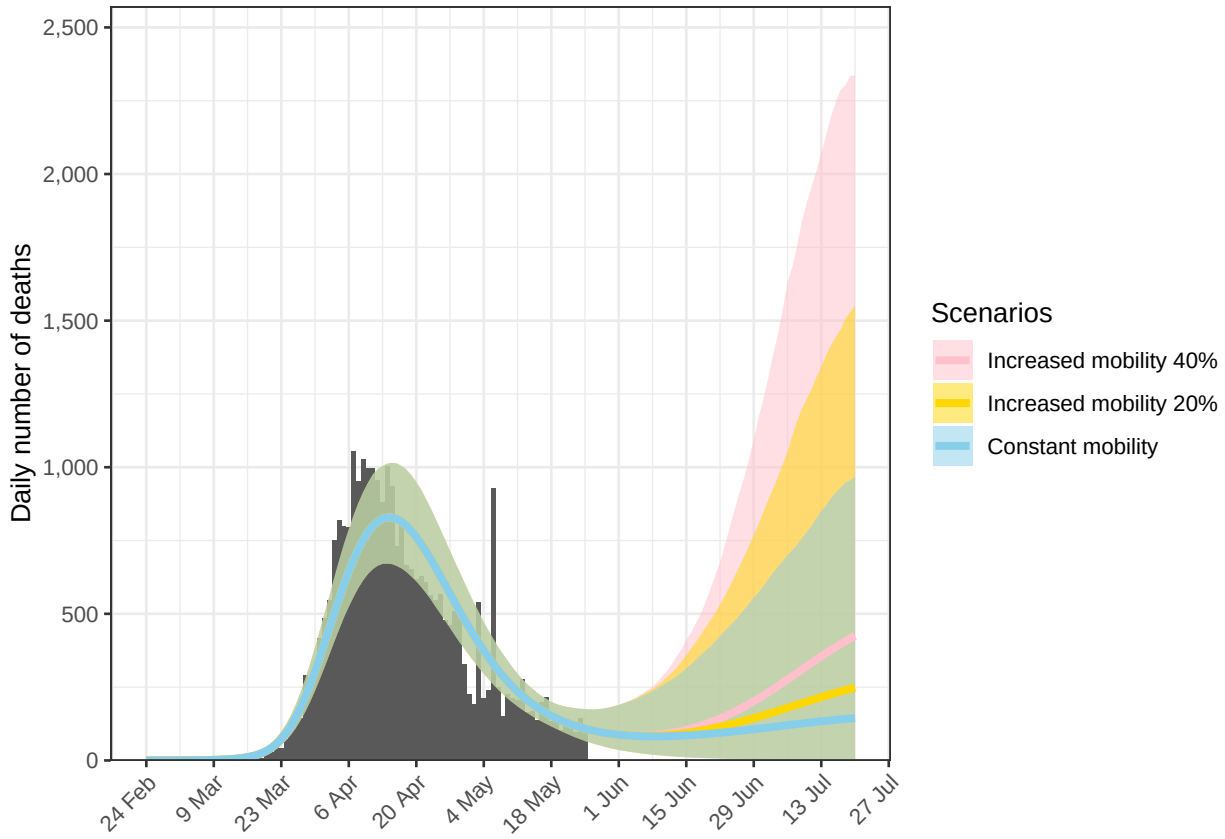

Figure C10: manuscript Figure 8 (New York)

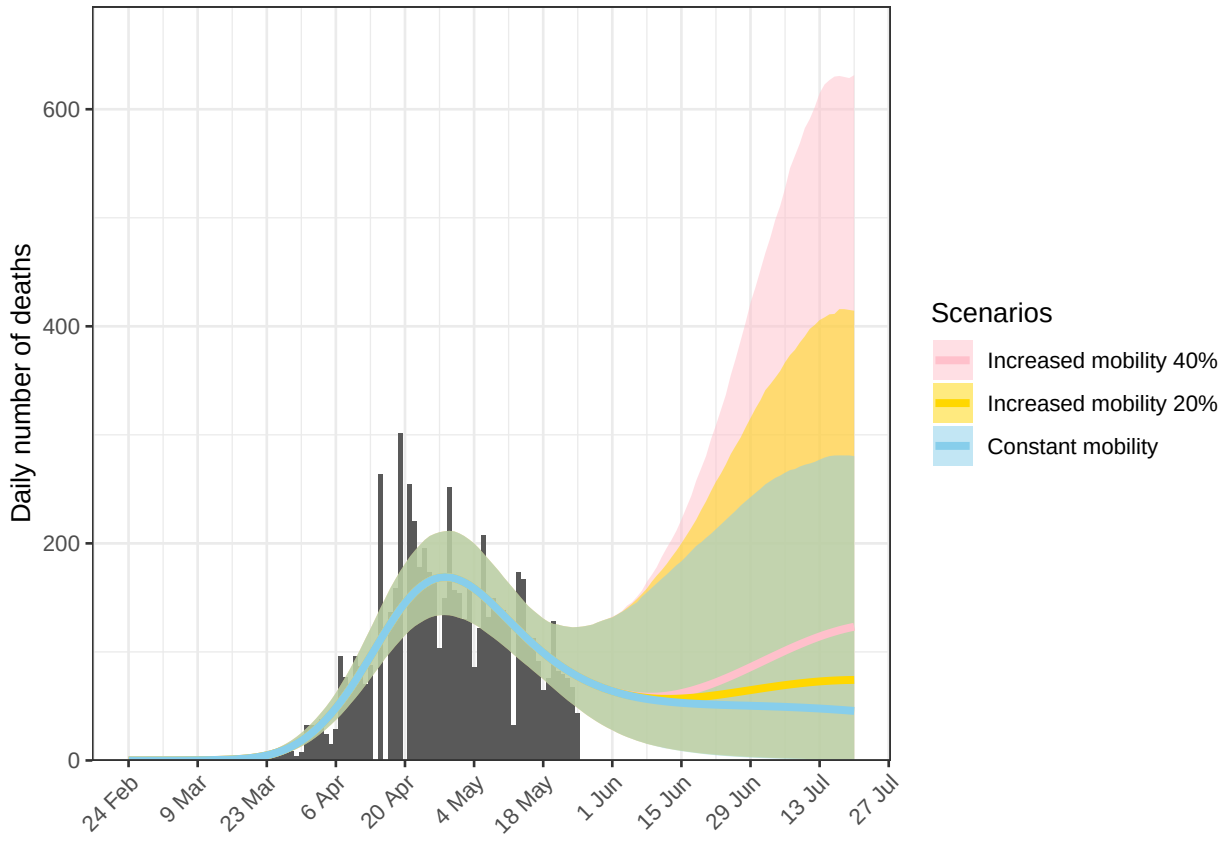

Figure C11: manuscript Figure 8 (Massachusetts)

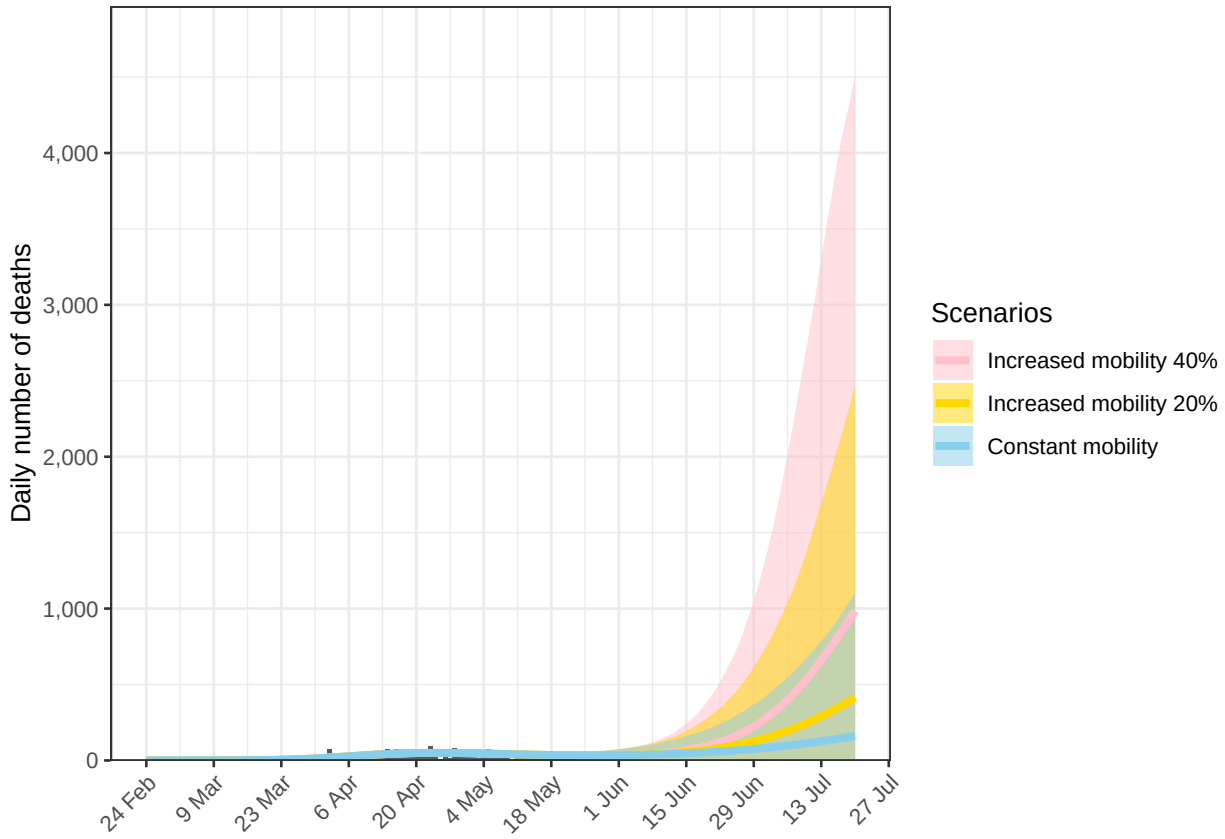

Figure C12: manuscript Figure 8 (Florida)

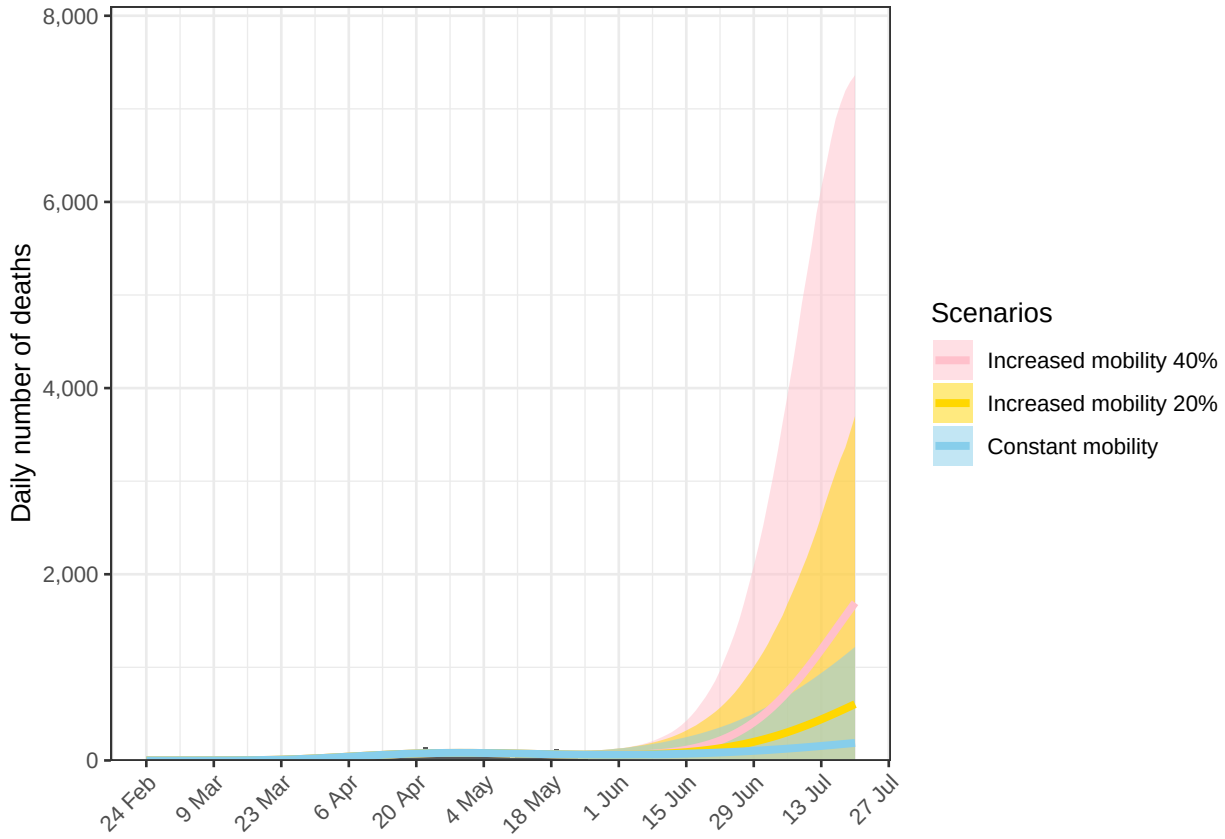

Figure C13: manuscript Figure 8 (California)

Acknowledgements

I would like to thank Dr Bhatt and his team for promptly answering any queries I had with this reproduction. Dr Kornet (Cambridge) provided technical support for the reproduction. CODECHECK is financially supported by the Mozilla foundation.

Citing this document

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About CODECHECK

This certificate confirms that the codechecker could independently reproduce the results of a computational analysis given the data and code from a third party. A CODECHECK does not check whether the original computation analysis is correct. However, as all materials required for the reproduction are freely available by following the links in this document, the reader can then study for themselves the code and data.

About this document

This document was created using R Markdown using the `codecheck` R package. `make codecheck.pdf` will regenerate the report file.

```
sessionInfo()
```

```
## R version 4.0.1 (2020-06-06)
## Platform: x86_64-pc-linux-gnu (64-bit)
## Running under: Manjaro Linux
##
## Matrix products: default
## BLAS:   /usr/lib/libopenblasp-r0.3.9.so
## LAPACK: /usr/lib/liblapack.so.3.9.0
##
## locale:
##  [1] LC_CTYPE=en_GB.UTF-8       LC_NUMERIC=C
##  [3] LC_TIME=en_GB.UTF-8        LC_COLLATE=en_GB.UTF-8
##  [5] LC_MONETARY=en_GB.UTF-8    LC_MESSAGES=en_GB.UTF-8
##  [7] LC_PAPER=en_GB.UTF-8       LC_NAME=C
##  [9] LC_ADDRESS=C               LC_TELEPHONE=C
## [11] LC_MEASUREMENT=en_GB.UTF-8 LC_IDENTIFICATION=C
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets
## [6] methods   base
##
## other attached packages:
##  [1] readr_1.3.1          tibble_3.0.1
##  [3] rprojroot_1.3-2      codecheck_0.0.0.9005
##  [5] jsonlite_1.6.1       knitr_1.28
##  [7] rmarkdown_2.2.5      parsedate_1.2.0
##  [9] assertthat_0.2.1     R.cache_0.14.0
## [11] gh_1.1.0             stringr_1.4.0
## [13] yaml_2.2.1           xtable_1.8-4
```

```
## [15] zen4R_0.3-1
##
## loaded via a namespace (and not attached):
##  [1] Rcpp_1.0.4.6      highr_0.8         compiler_4.0.1
##  [4] pillar_1.4.4      R.methodsS3_1.8.0 R.utils_2.9.2
##  [7] tools_4.0.1       digest_0.6.25     evaluate_0.14
## [10] lifecycle_0.2.0   pkgconfig_2.0.3   rlang_0.4.6
## [13] cli_2.0.2         xfun_0.14         httr_1.4.1
## [16] xml2_1.3.2        hms_0.5.3         vctrs_0.3.1
## [19] glue_1.4.1        R6_2.4.1          fansi_0.4.1
## [22] magrittr_1.5      backports_1.1.6   htmltools_0.4.0
## [25] ellipsis_0.3.1    rvest_0.3.5       stringi_1.4.6
## [28] crayon_1.3.4      R.oo_1.23.0
```