

Appendix 1:
SEIR Model Vetting Plots
Scenario: 95% Mask Use With Mandates

Contents

| | | |
|----|--|----|
| 1 | United States of America: SEIR fit comparison | 7 |
| 2 | United States of America: Covariate fits and regression coefficients | 8 |
| 3 | Alabama: SEIR fit comparison | 9 |
| 4 | Alabama: Covariate fits and regression coefficients | 10 |
| 5 | Alaska: SEIR fit comparison | 11 |
| 6 | Alaska: Covariate fits and regression coefficients | 12 |
| 7 | Arizona: SEIR fit comparison | 13 |
| 8 | Arizona: Covariate fits and regression coefficients | 14 |
| 9 | Arkansas: SEIR fit comparison | 15 |
| 10 | Arkansas: Covariate fits and regression coefficients | 16 |
| 11 | California: SEIR fit comparison | 17 |
| 12 | California: Covariate fits and regression coefficients | 18 |
| 13 | Colorado: SEIR fit comparison | 19 |
| 14 | Colorado: Covariate fits and regression coefficients | 20 |
| 15 | Connecticut: SEIR fit comparison | 21 |
| 16 | Connecticut: Covariate fits and regression coefficients | 22 |
| 17 | Delaware: SEIR fit comparison | 23 |
| 18 | Delaware: Covariate fits and regression coefficients | 24 |
| 19 | District of Columbia: SEIR fit comparison | 25 |
| 20 | District of Columbia: Covariate fits and regression coefficients | 26 |
| 21 | Florida: SEIR fit comparison | 27 |
| 22 | Florida: Covariate fits and regression coefficients | 28 |
| 23 | Georgia: SEIR fit comparison | 29 |

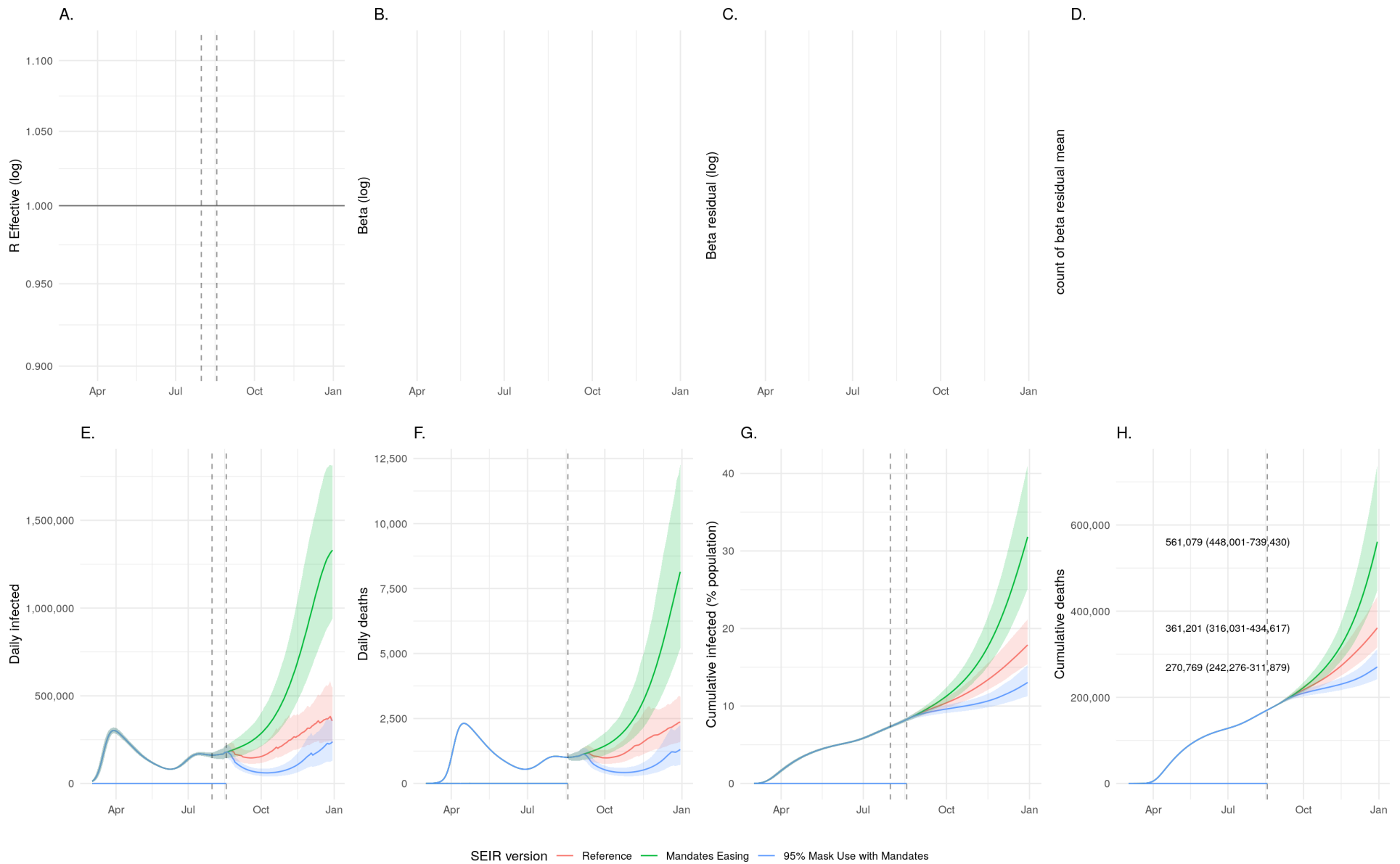
| | |
|--|----|
| 24 Georgia: Covariate fits and regression coefficients | 30 |
| 25 Hawaii: SEIR fit comparison | 31 |
| 26 Hawaii: Covariate fits and regression coefficients | 32 |
| 27 Idaho: SEIR fit comparison | 33 |
| 28 Idaho: Covariate fits and regression coefficients | 34 |
| 29 Illinois: SEIR fit comparison | 35 |
| 30 Illinois: Covariate fits and regression coefficients | 36 |
| 31 Indiana: SEIR fit comparison | 37 |
| 32 Indiana: Covariate fits and regression coefficients | 38 |
| 33 Iowa: SEIR fit comparison | 39 |
| 34 Iowa: Covariate fits and regression coefficients | 40 |
| 35 Kansas: SEIR fit comparison | 41 |
| 36 Kansas: Covariate fits and regression coefficients | 42 |
| 37 Kentucky: SEIR fit comparison | 43 |
| 38 Kentucky: Covariate fits and regression coefficients | 44 |
| 39 Louisiana: SEIR fit comparison | 45 |
| 40 Louisiana: Covariate fits and regression coefficients | 46 |
| 41 Maine: SEIR fit comparison | 47 |
| 42 Maine: Covariate fits and regression coefficients | 48 |
| 43 Maryland: SEIR fit comparison | 49 |
| 44 Maryland: Covariate fits and regression coefficients | 50 |
| 45 Massachusetts: SEIR fit comparison | 51 |
| 46 Massachusetts: Covariate fits and regression coefficients | 52 |
| 47 Michigan: SEIR fit comparison | 53 |
| 48 Michigan: Covariate fits and regression coefficients | 54 |

| | |
|---|----|
| 49 Minnesota: SEIR fit comparison | 55 |
| 50 Minnesota: Covariate fits and regression coefficients | 56 |
| 51 Mississippi: SEIR fit comparison | 57 |
| 52 Mississippi: Covariate fits and regression coefficients | 58 |
| 53 Missouri: SEIR fit comparison | 59 |
| 54 Missouri: Covariate fits and regression coefficients | 60 |
| 55 Montana: SEIR fit comparison | 61 |
| 56 Montana: Covariate fits and regression coefficients | 62 |
| 57 Nebraska: SEIR fit comparison | 63 |
| 58 Nebraska: Covariate fits and regression coefficients | 64 |
| 59 Nevada: SEIR fit comparison | 65 |
| 60 Nevada: Covariate fits and regression coefficients | 66 |
| 61 New Hampshire: SEIR fit comparison | 67 |
| 62 New Hampshire: Covariate fits and regression coefficients | 68 |
| 63 New Jersey: SEIR fit comparison | 69 |
| 64 New Jersey: Covariate fits and regression coefficients | 70 |
| 65 New Mexico: SEIR fit comparison | 71 |
| 66 New Mexico: Covariate fits and regression coefficients | 72 |
| 67 New York: SEIR fit comparison | 73 |
| 68 New York: Covariate fits and regression coefficients | 74 |
| 69 North Carolina: SEIR fit comparison | 75 |
| 70 North Carolina: Covariate fits and regression coefficients | 76 |
| 71 North Dakota: SEIR fit comparison | 77 |
| 72 North Dakota: Covariate fits and regression coefficients | 78 |
| 73 Ohio: SEIR fit comparison | 79 |

| | |
|---|-----|
| 74 Ohio: Covariate fits and regression coefficients | 80 |
| 75 Oklahoma: SEIR fit comparison | 81 |
| 76 Oklahoma: Covariate fits and regression coefficients | 82 |
| 77 Oregon: SEIR fit comparison | 83 |
| 78 Oregon: Covariate fits and regression coefficients | 84 |
| 79 Pennsylvania: SEIR fit comparison | 85 |
| 80 Pennsylvania: Covariate fits and regression coefficients | 86 |
| 81 Rhode Island: SEIR fit comparison | 87 |
| 82 Rhode Island: Covariate fits and regression coefficients | 88 |
| 83 South Carolina: SEIR fit comparison | 89 |
| 84 South Carolina: Covariate fits and regression coefficients | 90 |
| 85 South Dakota: SEIR fit comparison | 91 |
| 86 South Dakota: Covariate fits and regression coefficients | 92 |
| 87 Tennessee: SEIR fit comparison | 93 |
| 88 Tennessee: Covariate fits and regression coefficients | 94 |
| 89 Texas: SEIR fit comparison | 95 |
| 90 Texas: Covariate fits and regression coefficients | 96 |
| 91 Utah: SEIR fit comparison | 97 |
| 92 Utah: Covariate fits and regression coefficients | 98 |
| 93 Vermont: SEIR fit comparison | 99 |
| 94 Vermont: Covariate fits and regression coefficients | 100 |
| 95 Virginia: SEIR fit comparison | 101 |
| 96 Virginia: Covariate fits and regression coefficients | 102 |
| 97 Washington: SEIR fit comparison | 103 |
| 98 Washington: Covariate fits and regression coefficients | 104 |

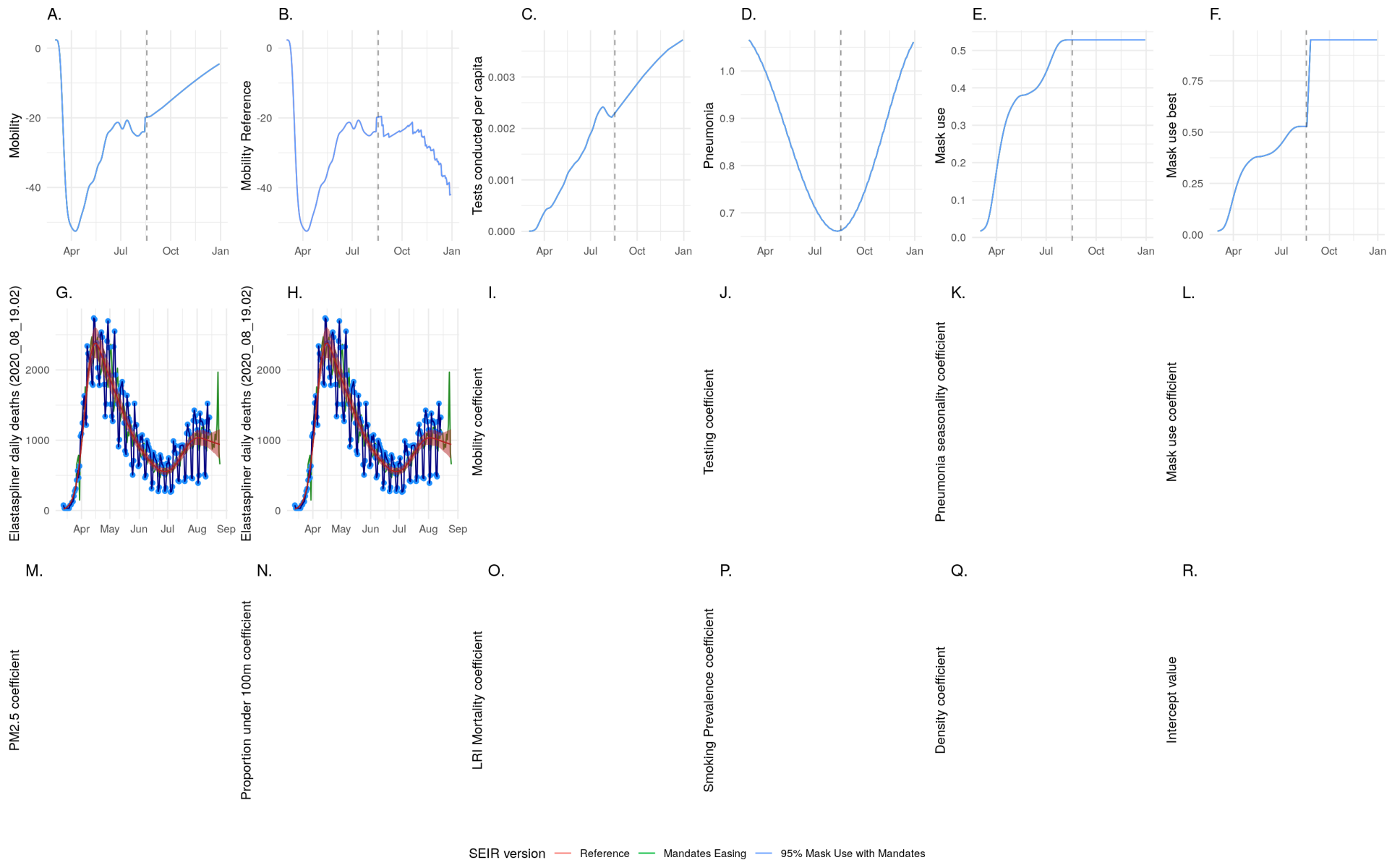
| | | |
|-----|---|-----|
| 99 | West Virginia: SEIR fit comparison | 105 |
| 100 | West Virginia: Covariate fits and regression coefficients | 106 |
| 101 | Wisconsin: SEIR fit comparison | 107 |
| 102 | Wisconsin: Covariate fits and regression coefficients | 108 |
| 103 | Wyoming: SEIR fit comparison | 109 |
| 104 | Wyoming: Covariate fits and regression coefficients | 110 |
| 105 | Spokane County: SEIR fit comparison | 111 |
| 106 | Spokane County: Covariate fits and regression coefficients | 112 |
| 107 | King and Snohomish Counties: SEIR fit comparison | 113 |
| 108 | King and Snohomish Counties: Covariate fits and regression coefficients | 114 |
| 109 | Washington except for King, Snohomish, and Spokane Counties: SEIR fit comparison | 115 |
| 110 | Washington except for King, Snohomish, and Spokane Counties: Covariate fits and regression coefficients | 117 |

1 United States of America: SEIR fit comparison



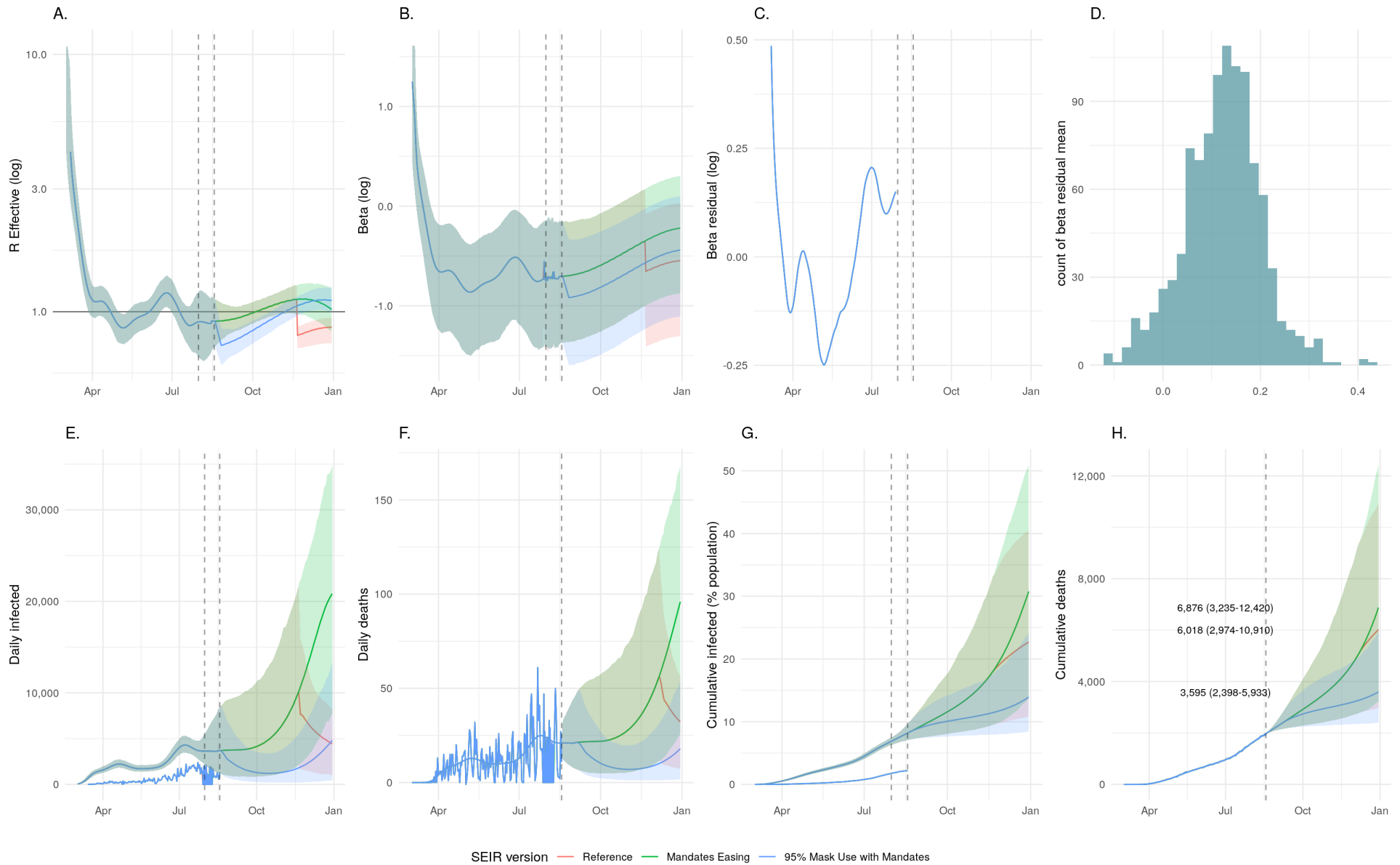
United States of America: SEIR fit comparison. Panels **A-D** display values that are not directly calculated for aggregate locations. **E**: predicted daily infections from each model through December 31. **F**: predicted daily deaths from each model through December 31. **G**: predicted cumulative infections through December 31, as a proportion of the total population. **H**: predicted cumulative deaths through December 31. In panels **E**, **F**, **G**, and **H**, reported death and infections are plotted alongside model predictions in light blue.

2 United States of America: Covariate fits and regression coefficients



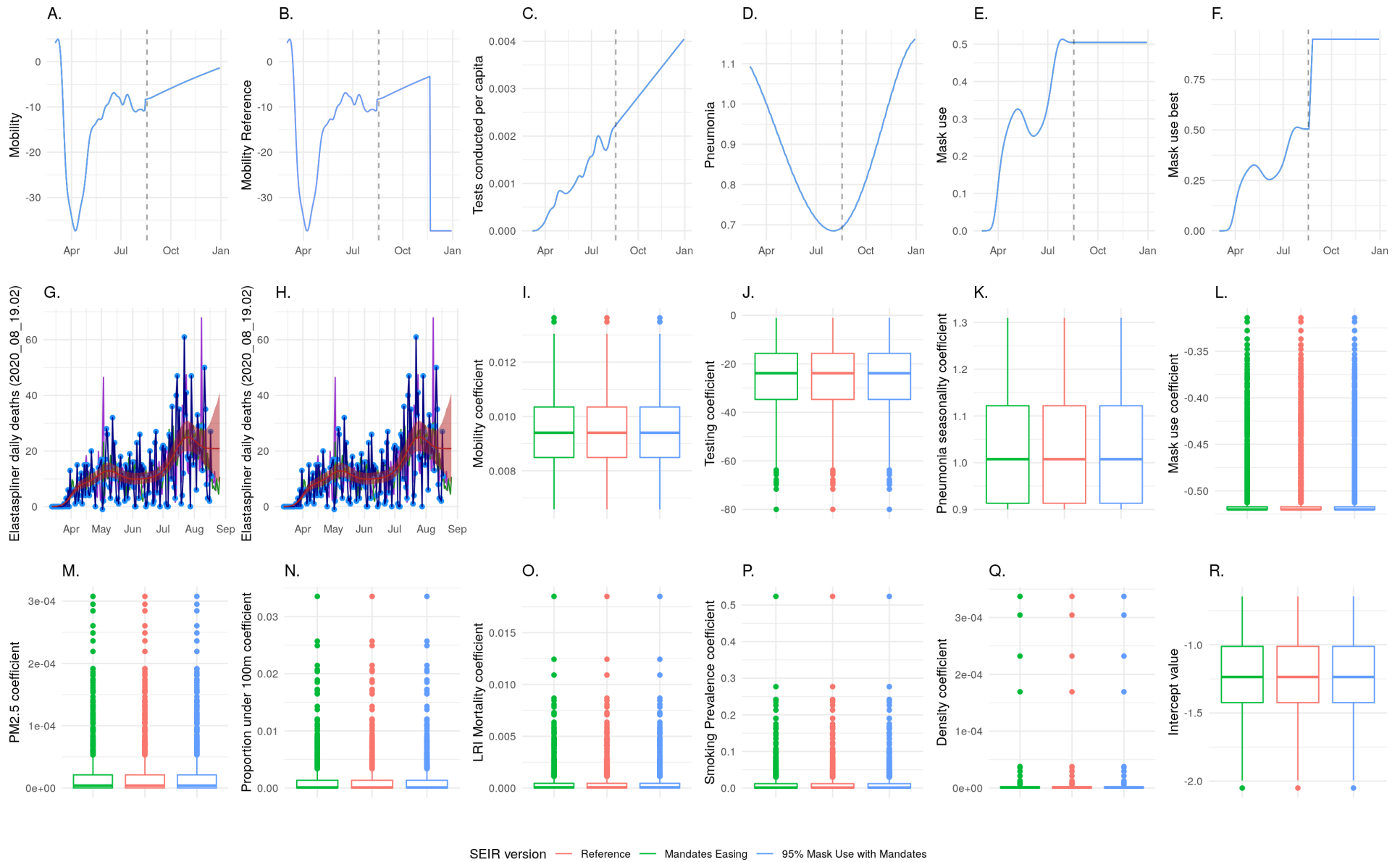
United States of America: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A**) mobility in the absence of additional mandates; **B**) mobility with additional mandates applied; **C**) diagnostic testing per capita; **D**) pneumonia seasonality; **E**) mask use per capita, and; **F**) mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). Panels **I-R** display coefficients for a regression fit to $\log(\beta)$, which is not applicable to aggregate locations.

3 Alabama: SEIR fit comparison



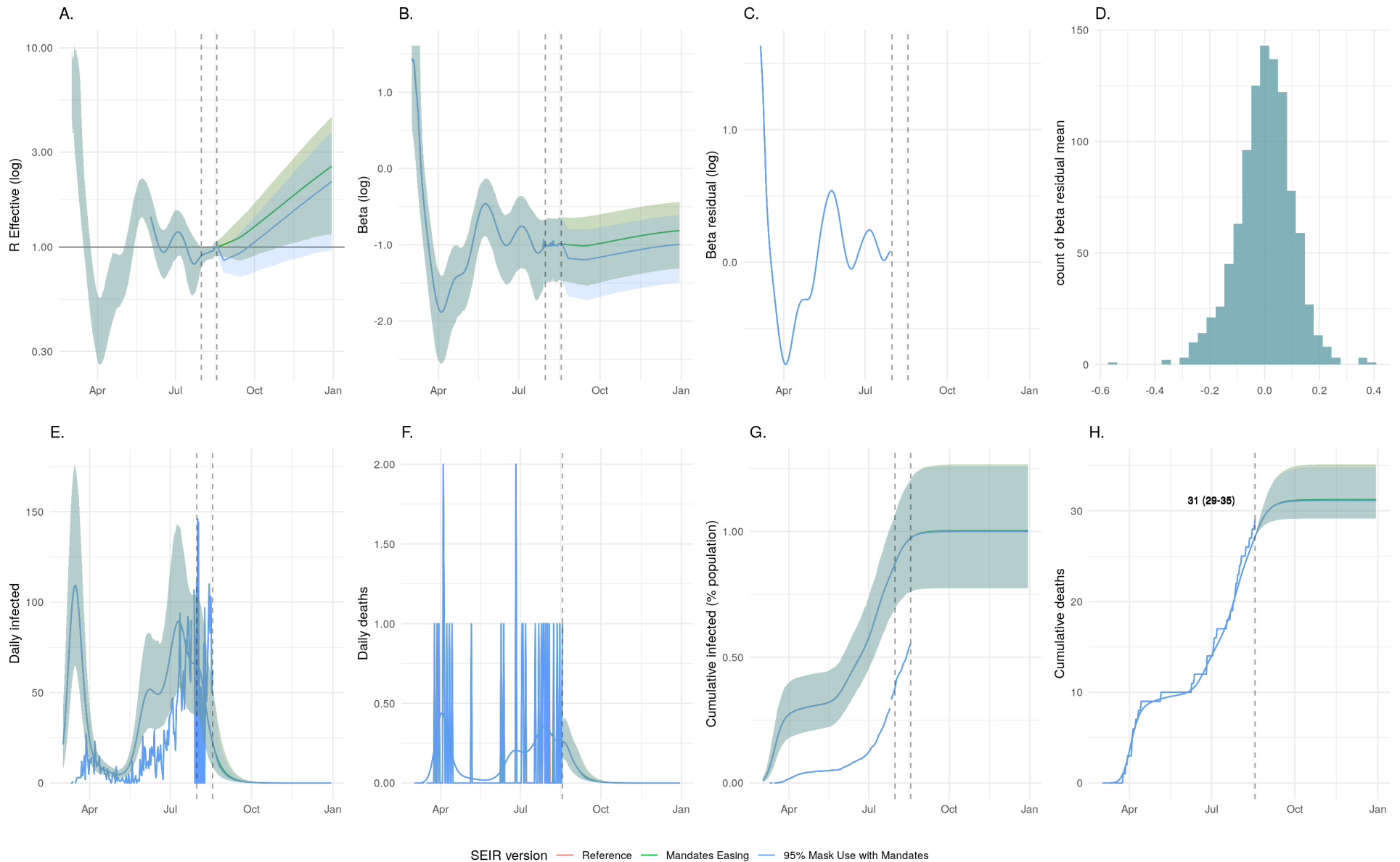
Alabama: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

4 Alabama: Covariate fits and regression coefficients



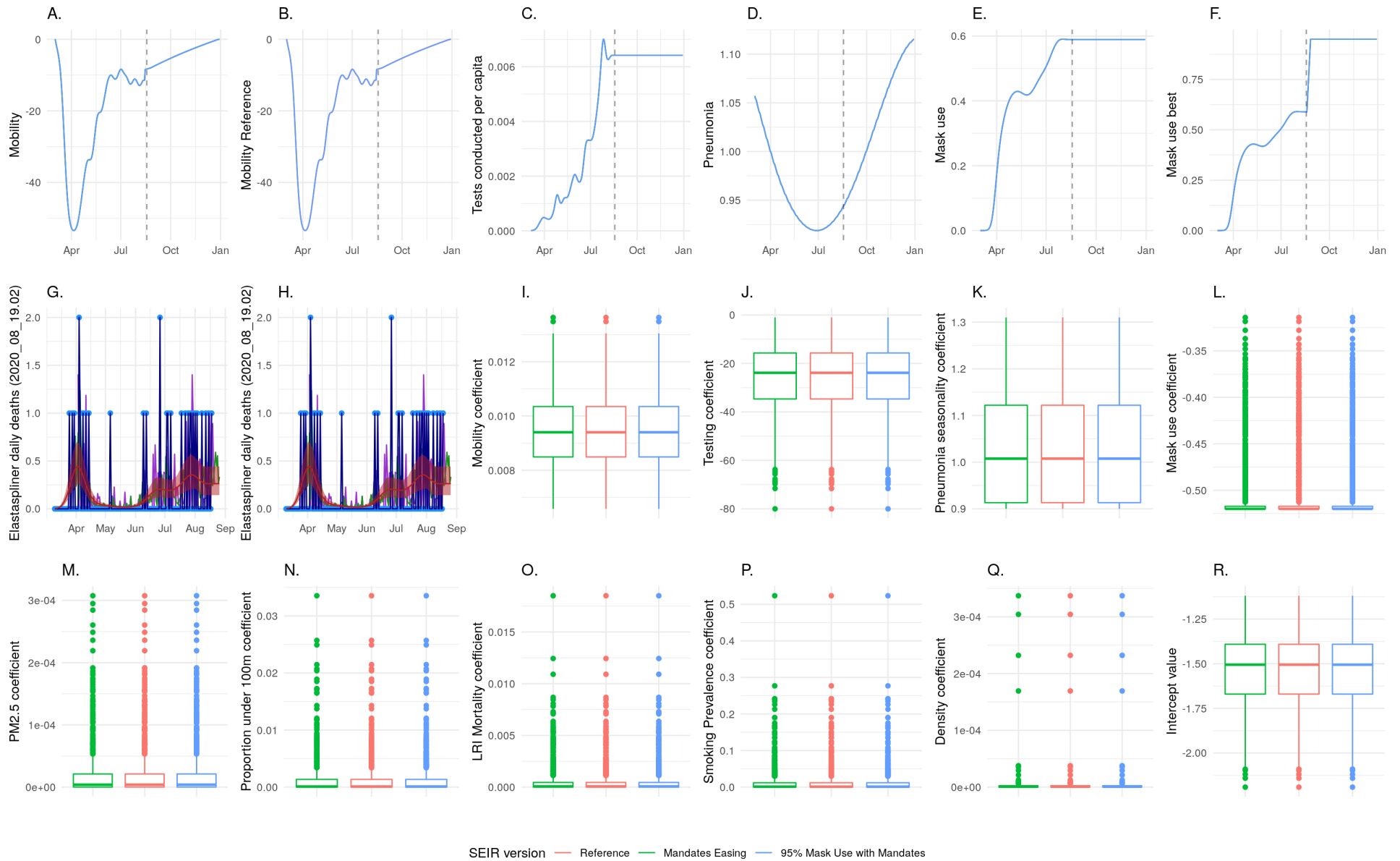
Alabama: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

5 Alaska: SEIR fit comparison



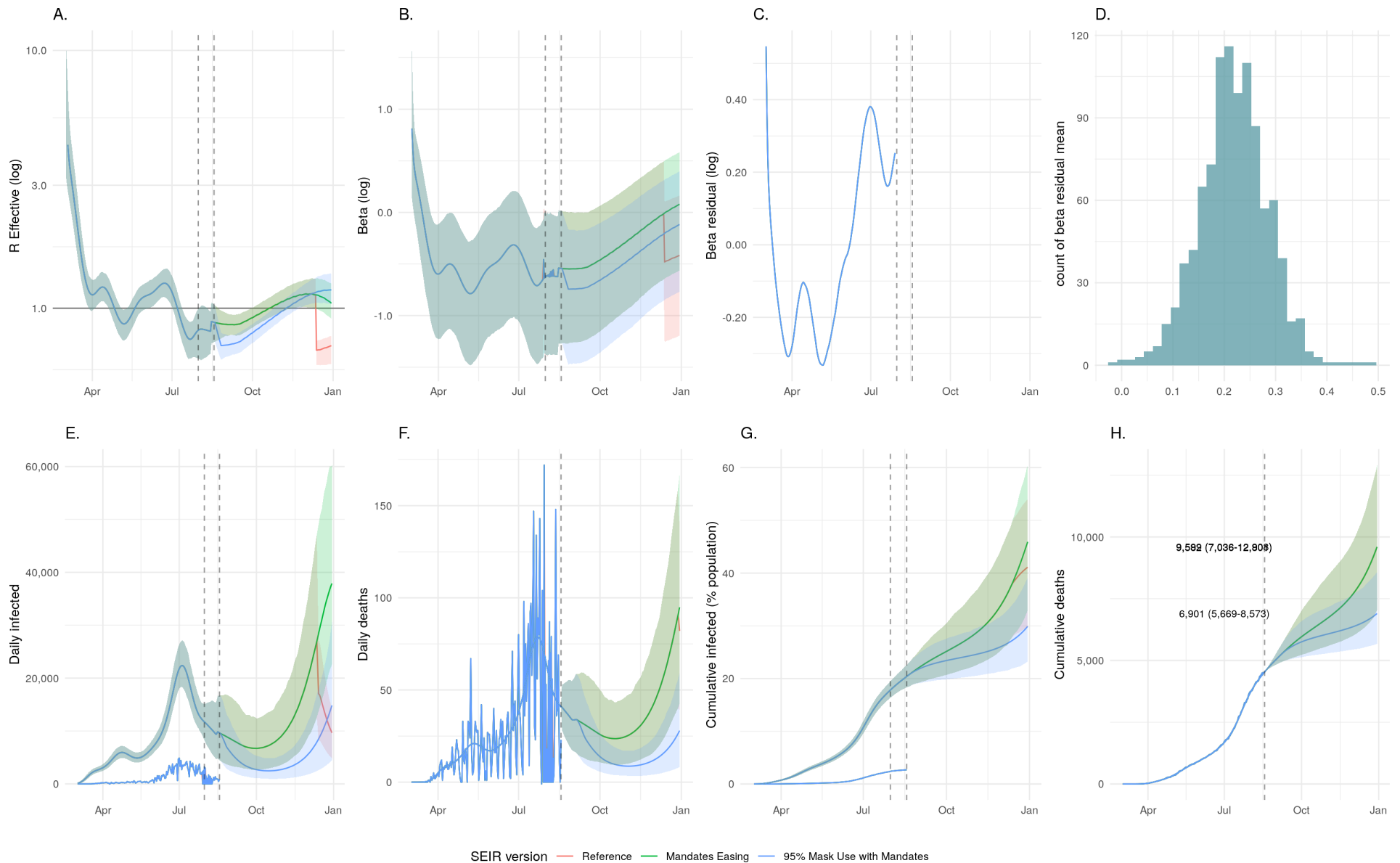
Alaska: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

6 Alaska: Covariate fits and regression coefficients

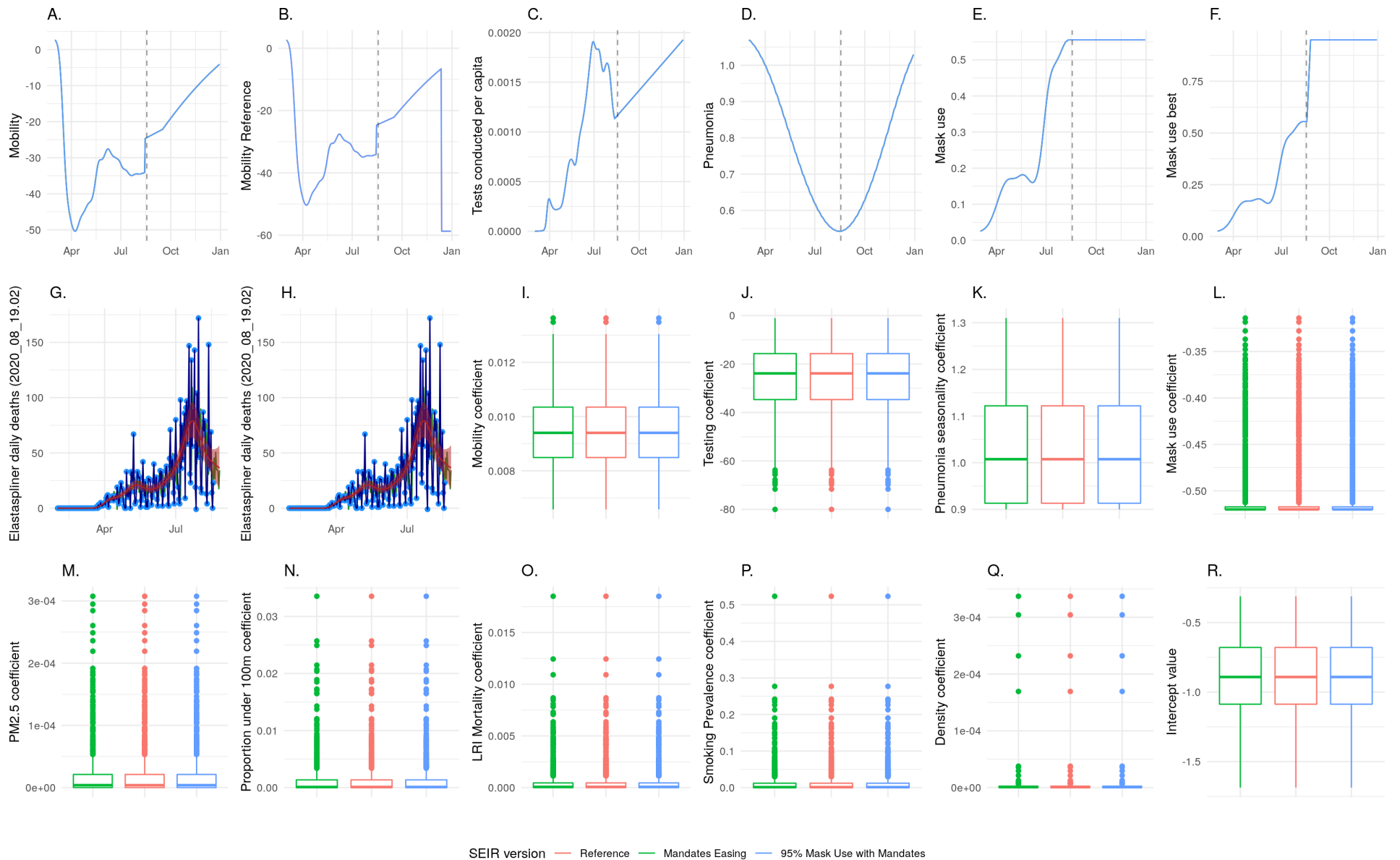


Alaska: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

7 Arizona: SEIR fit comparison

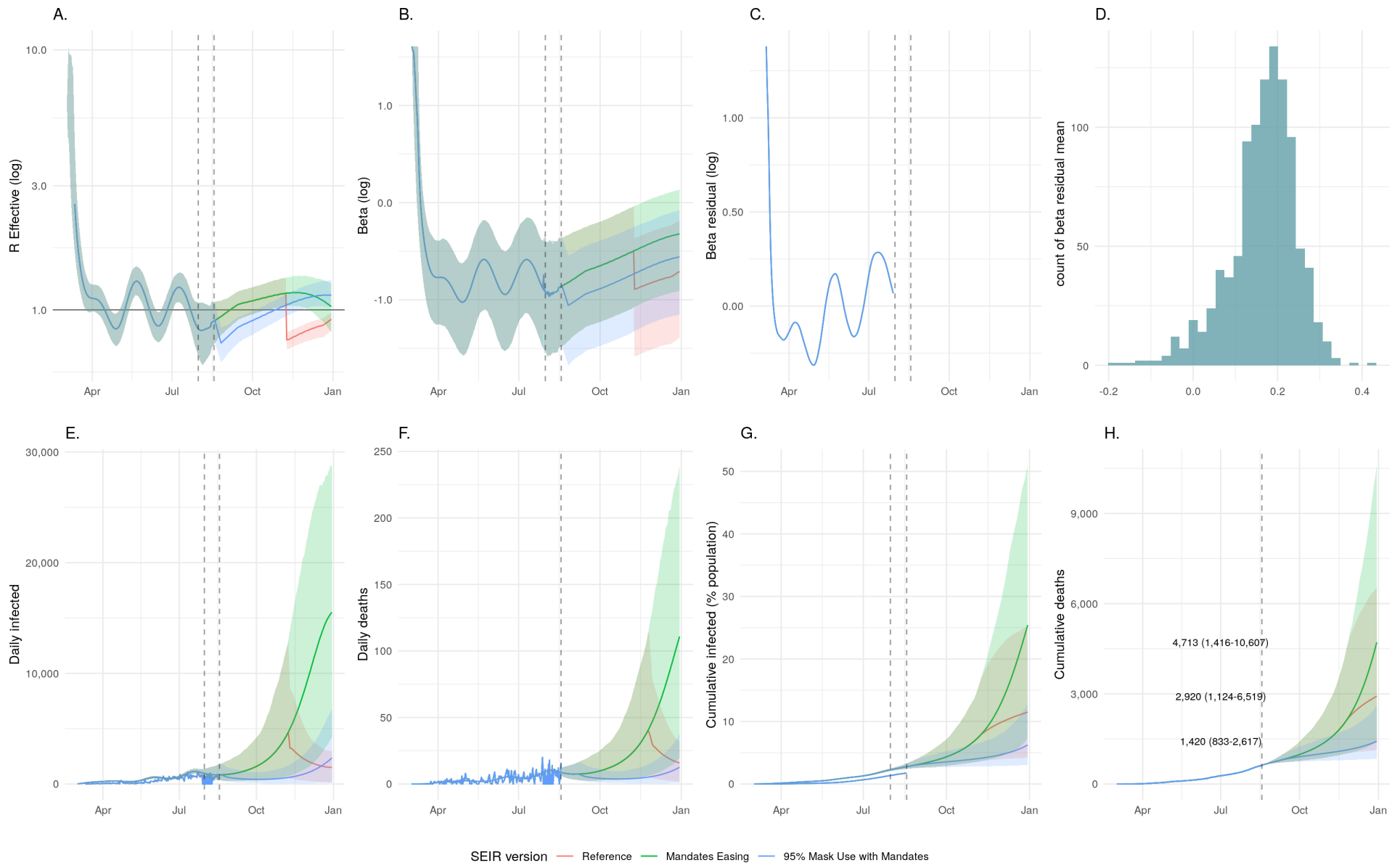


8 Arizona: Covariate fits and regression coefficients



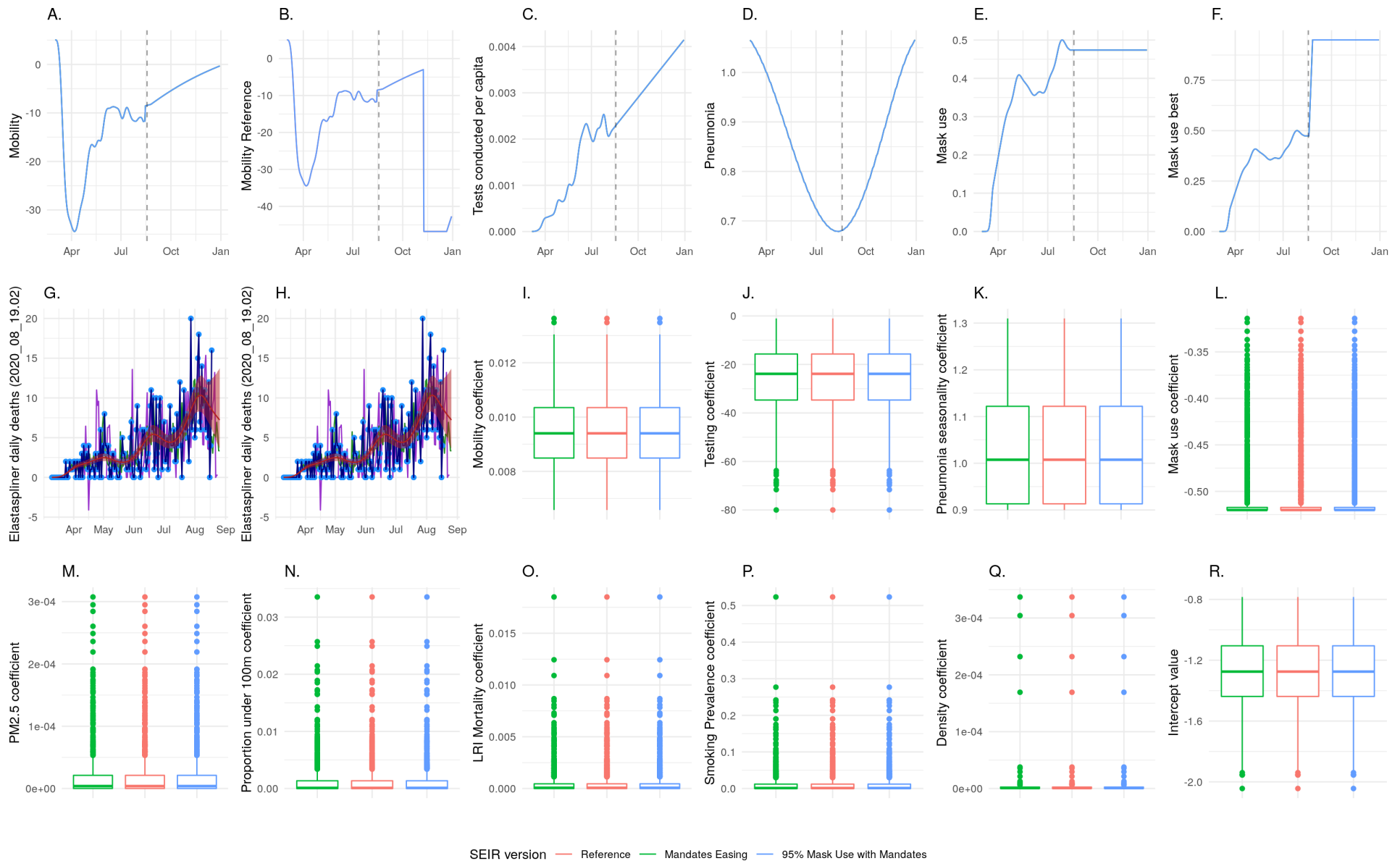
Arizona: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

9 Arkansas: SEIR fit comparison



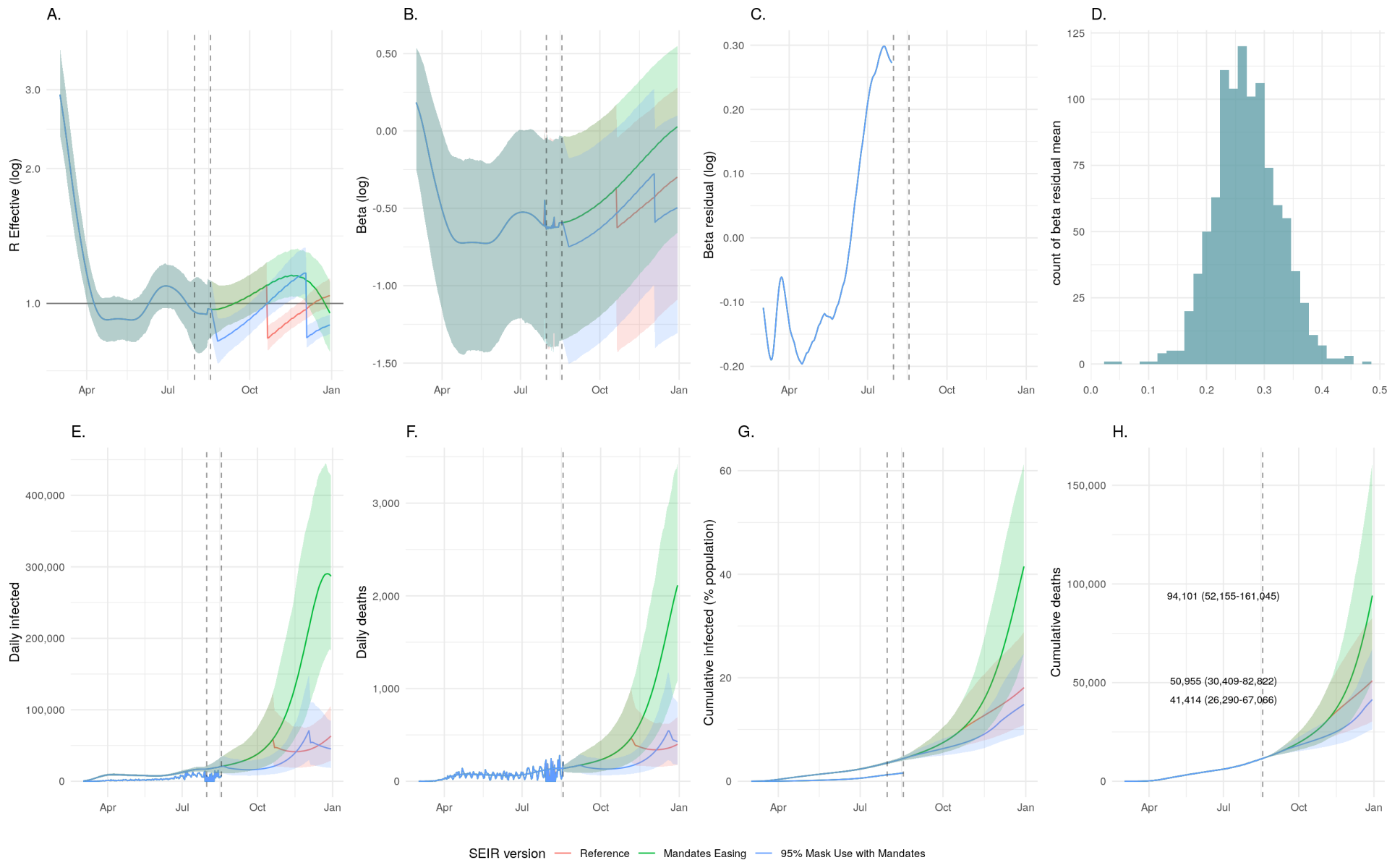
Arkansas: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

10 Arkansas: Covariate fits and regression coefficients



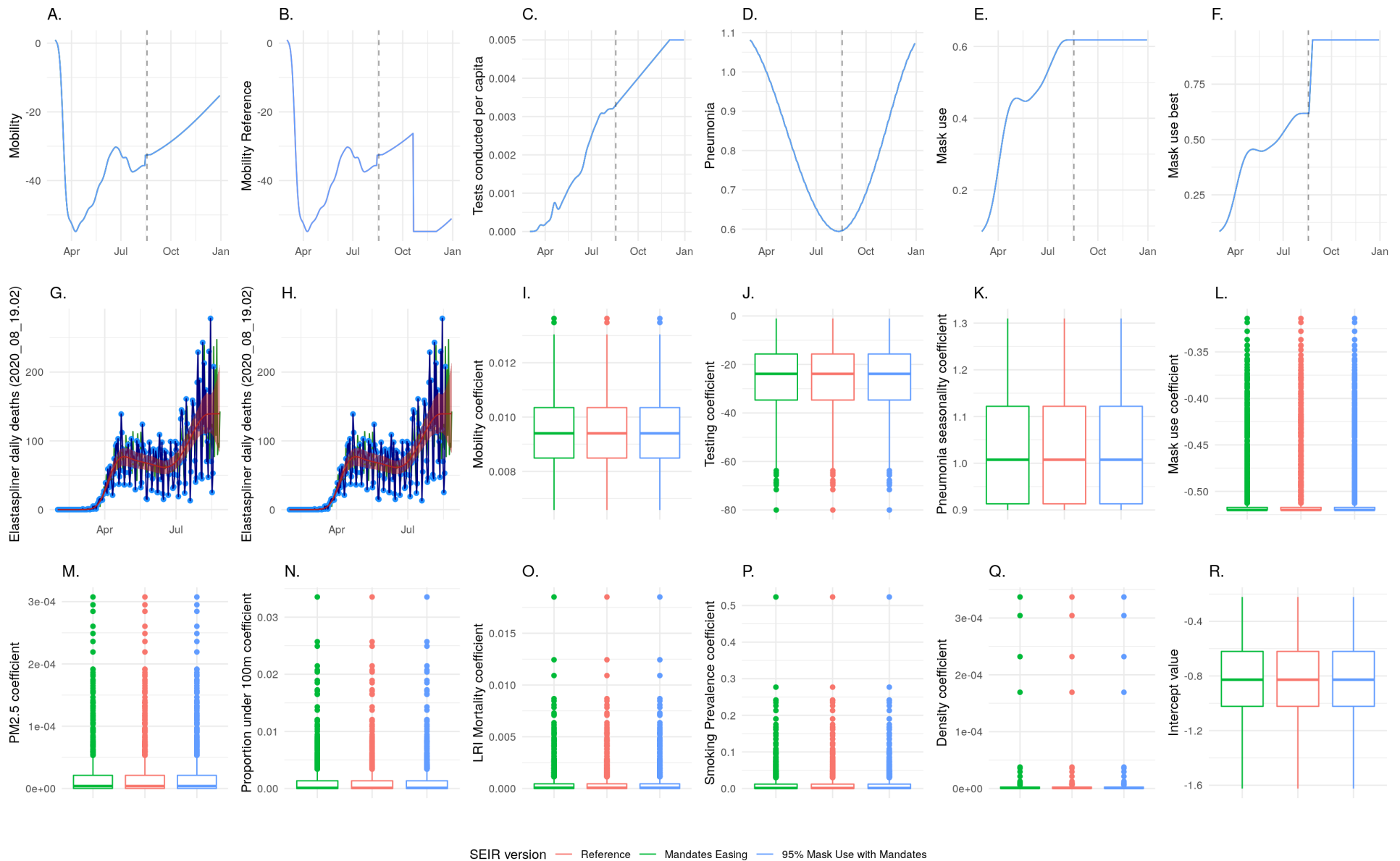
Arkansas: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

11 California: SEIR fit comparison



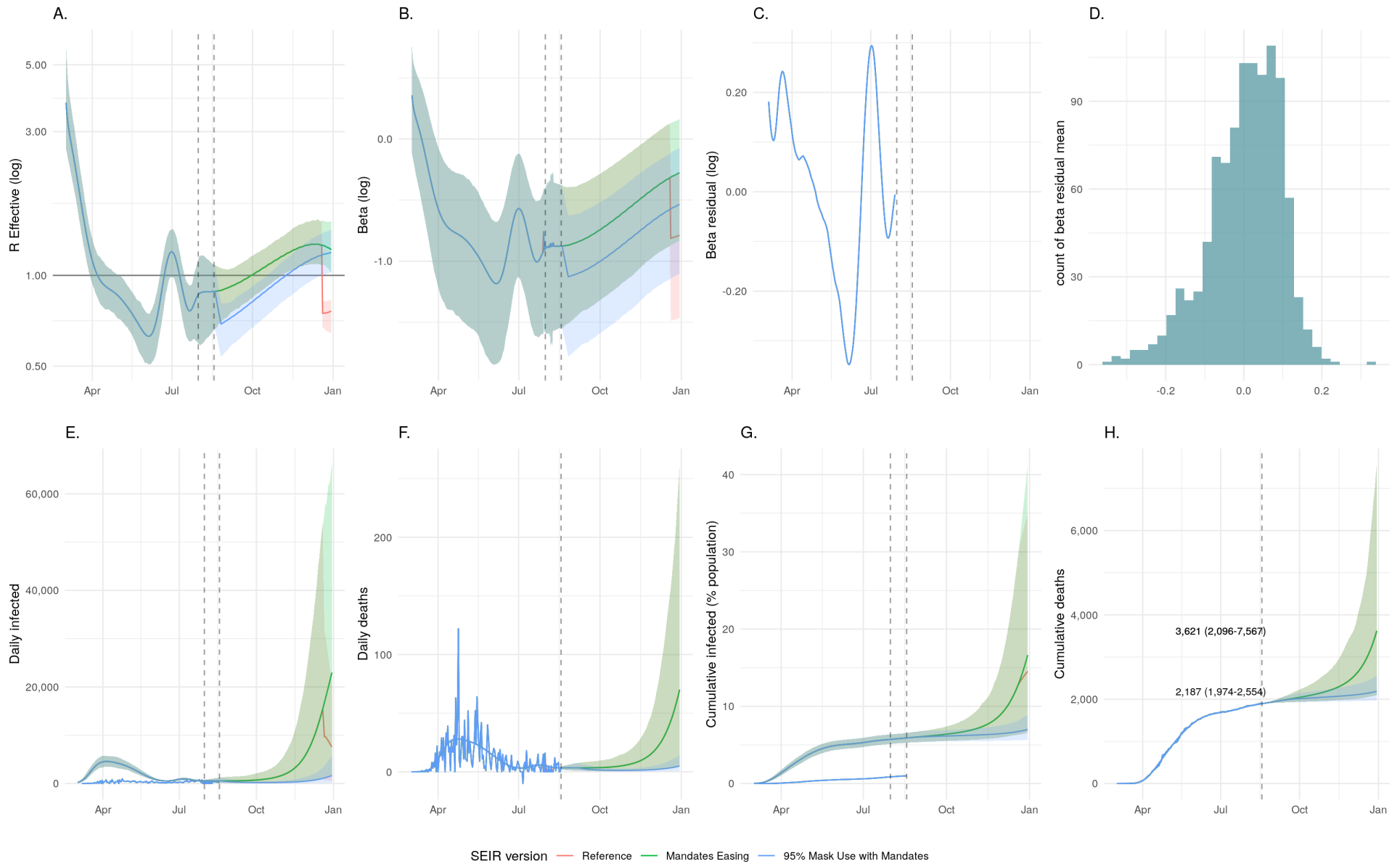
California: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR *beta* parameter. **C:** residual of predicted *beta* and the observed value calculated directly from infection data over time. **D:** histogram of residual values for *beta*. Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

12 California: Covariate fits and regression coefficients



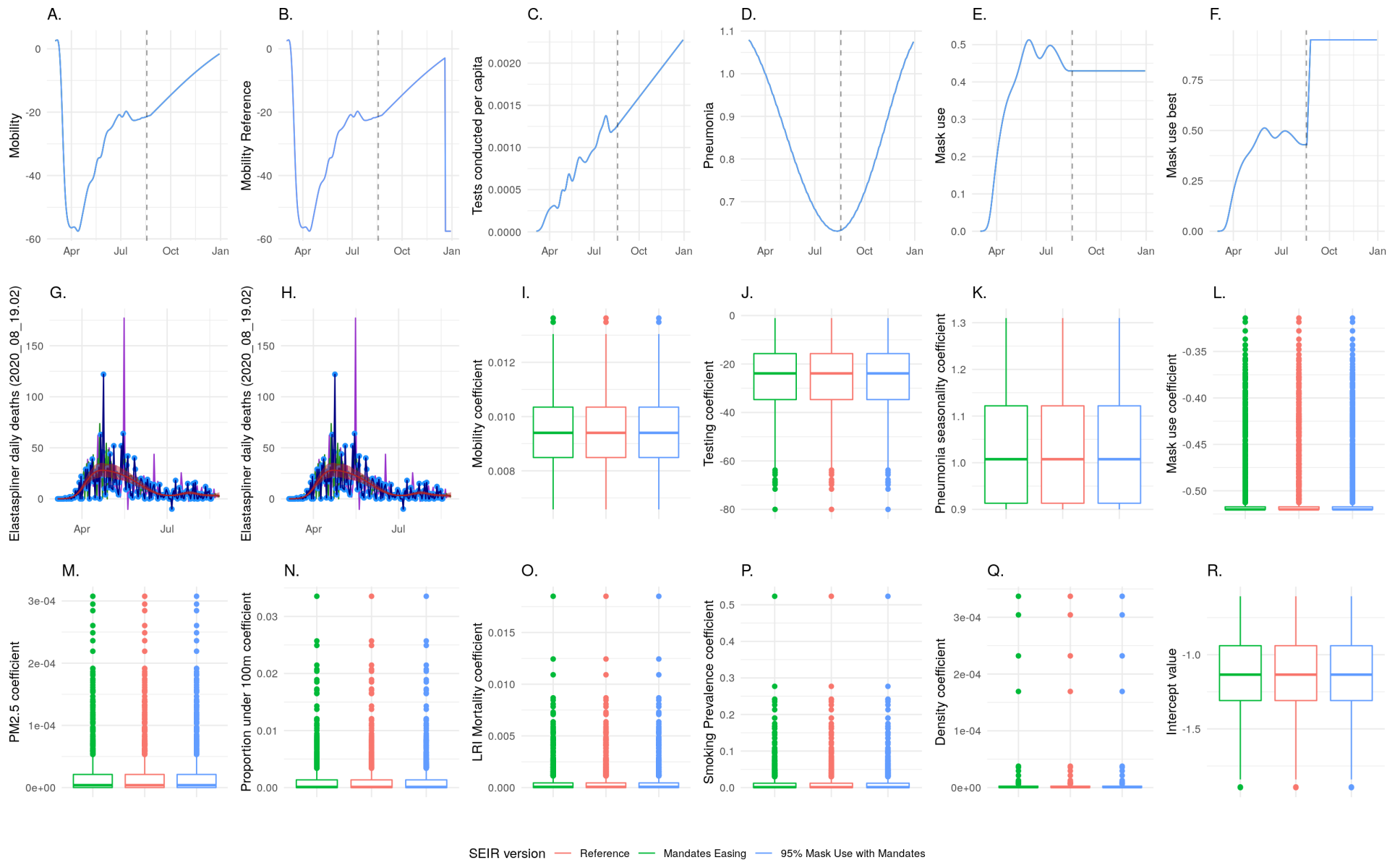
California: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

13 Colorado: SEIR fit comparison



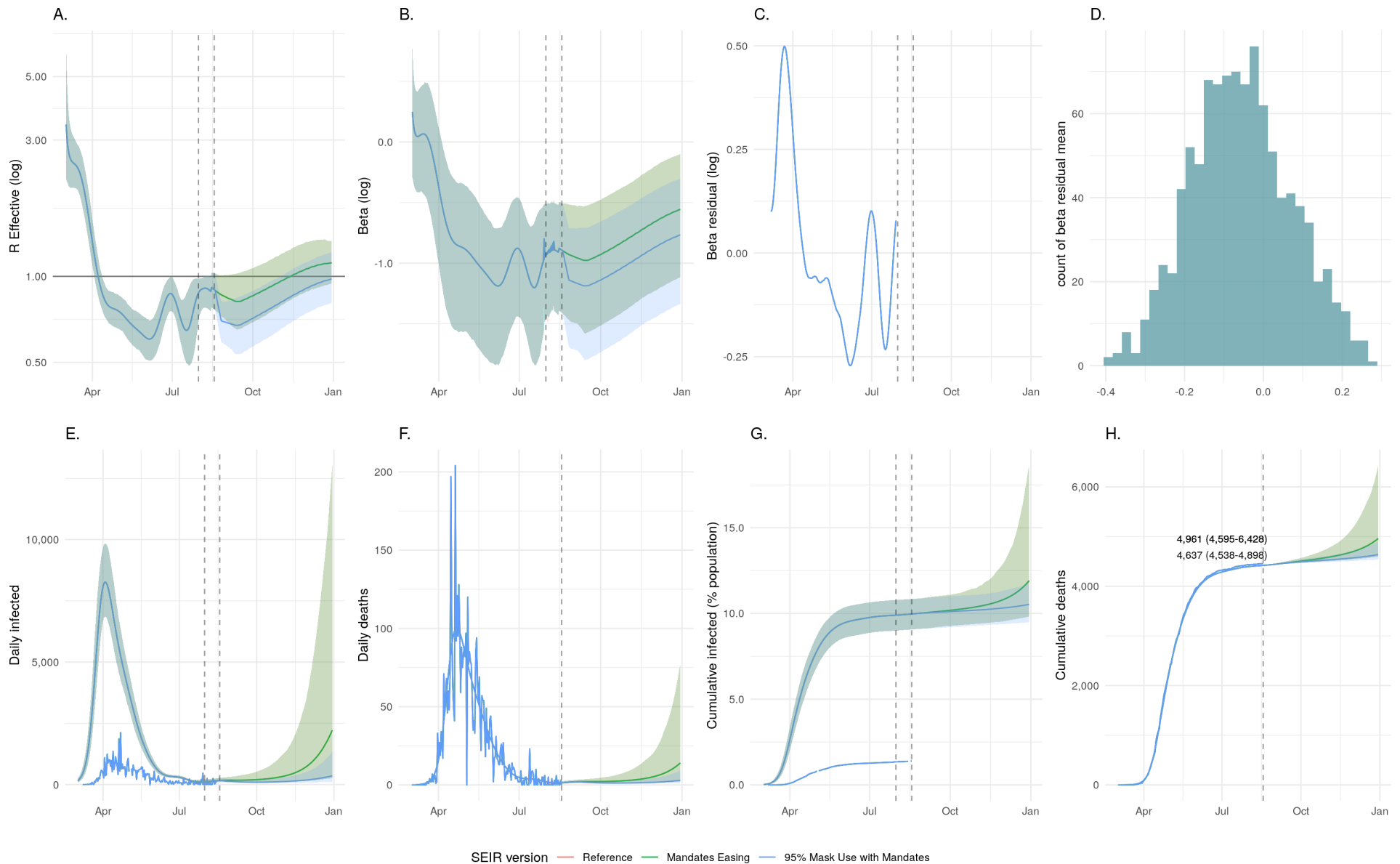
Colorado: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

14 Colorado: Covariate fits and regression coefficients



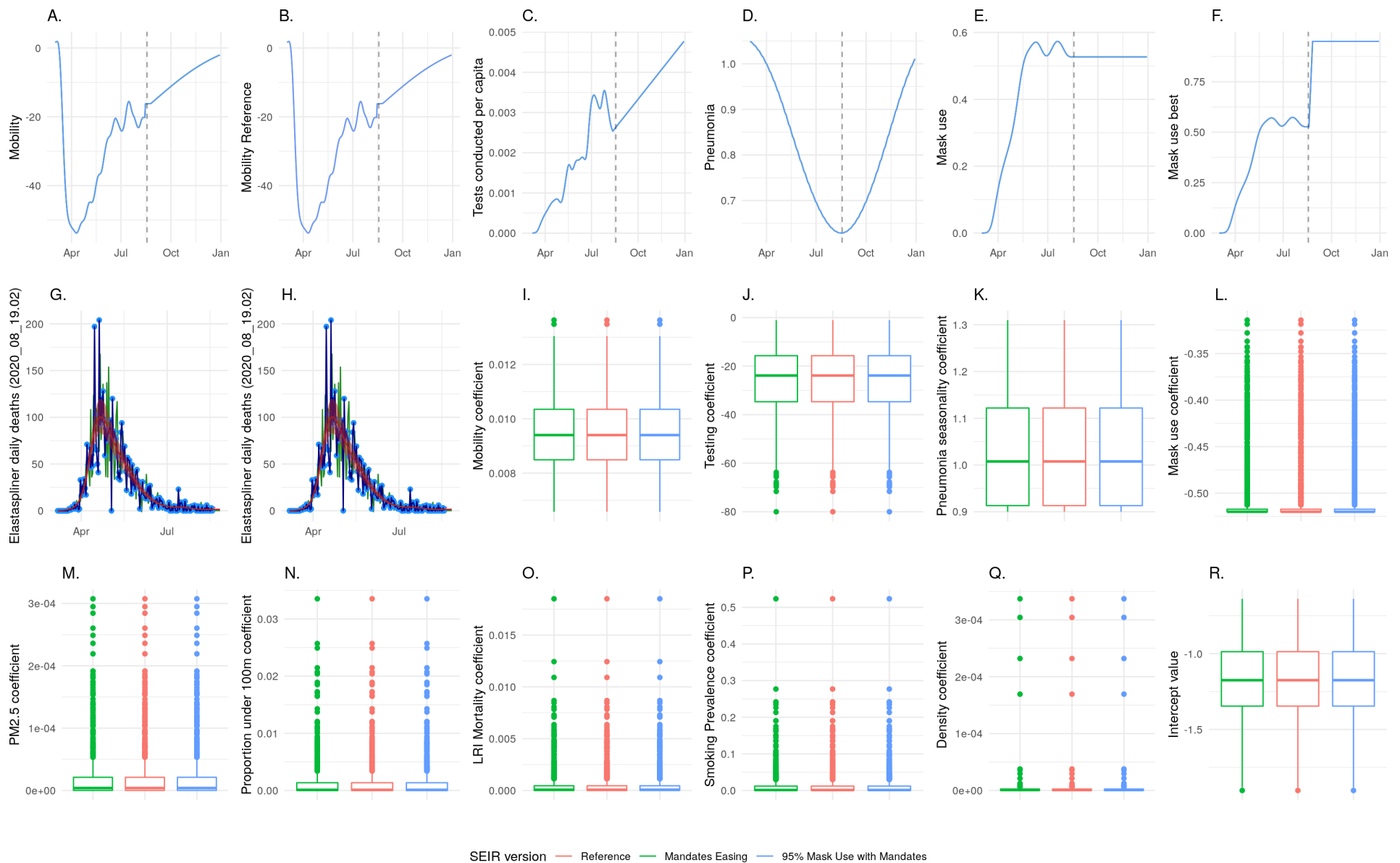
Colorado: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

15 Connecticut: SEIR fit comparison



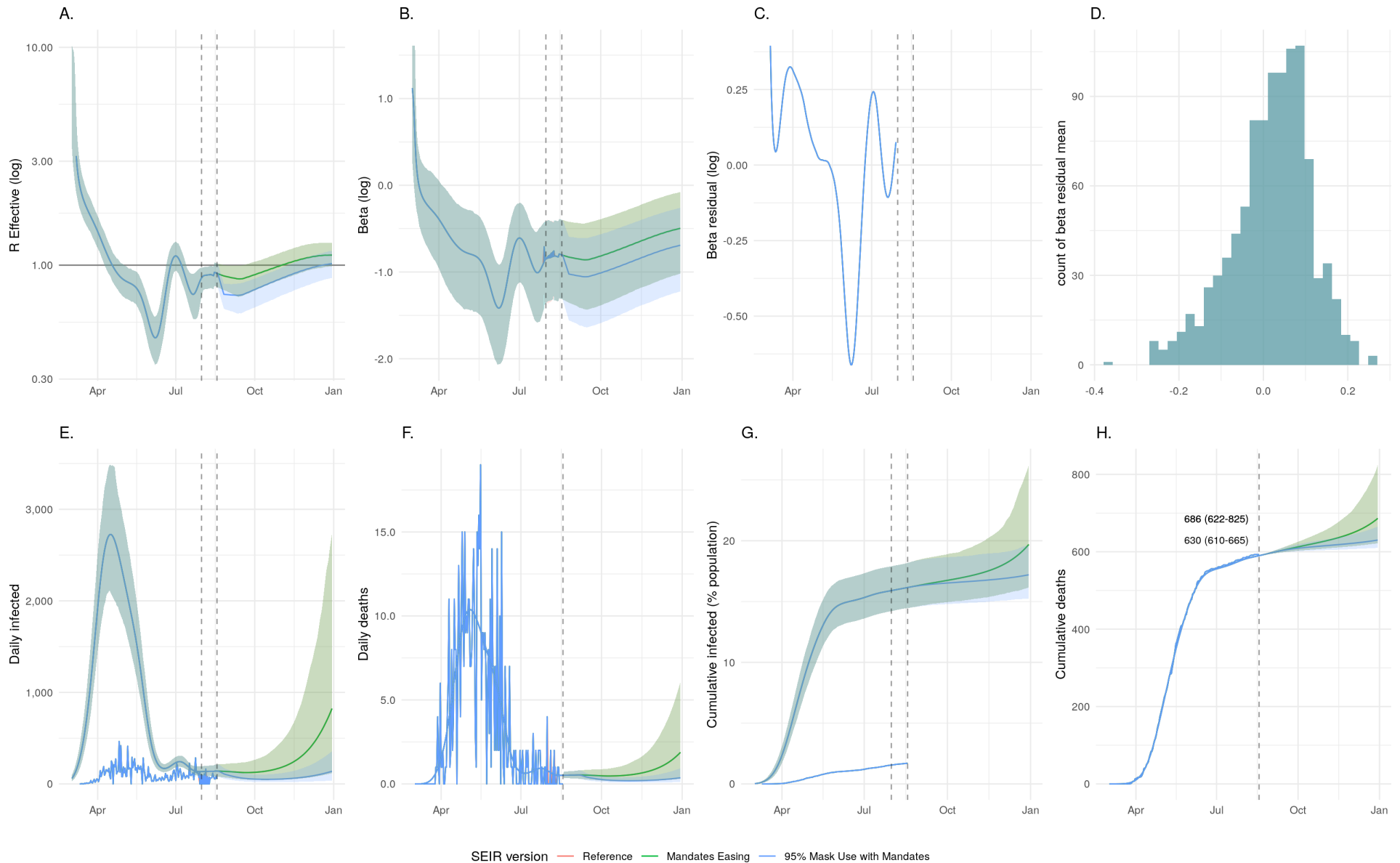
Connecticut: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR *beta* parameter. **C:** residual of predicted *beta* and the observed value calculated directly from infection data over time. **D:** histogram of residual values for *beta*. Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

16 Connecticut: Covariate fits and regression coefficients



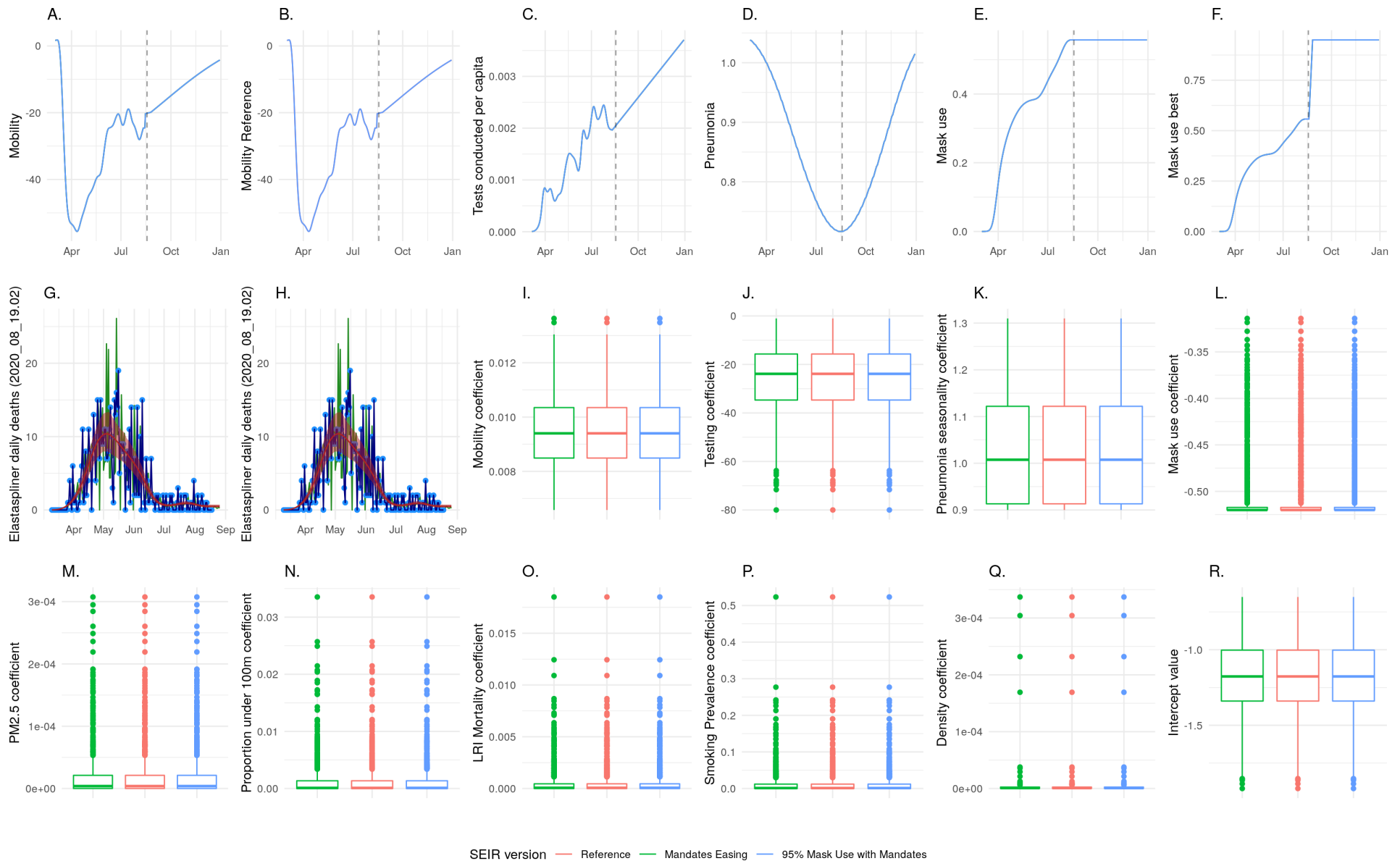
Connecticut: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

17 Delaware: SEIR fit comparison



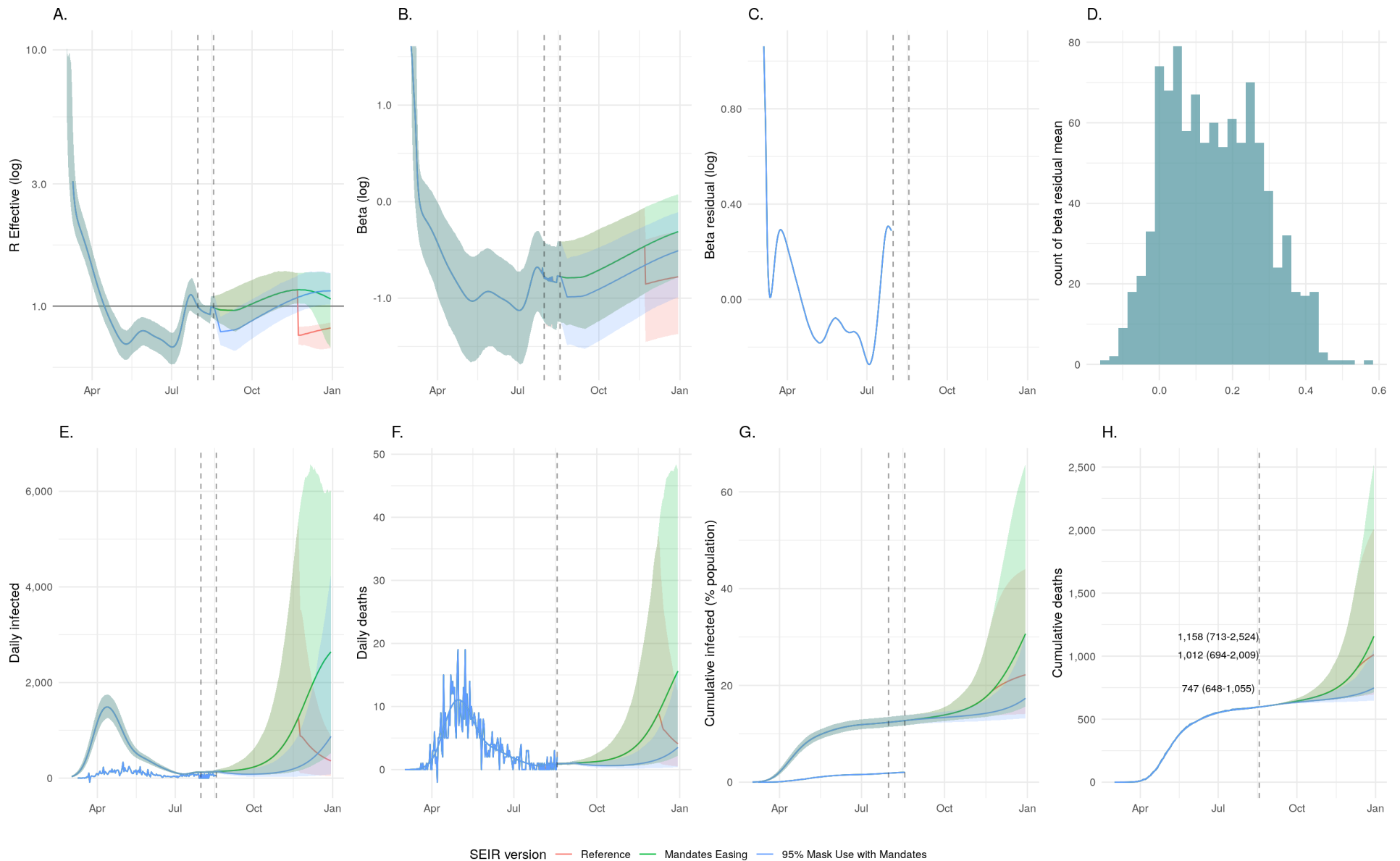
Delaware: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

18 Delaware: Covariate fits and regression coefficients



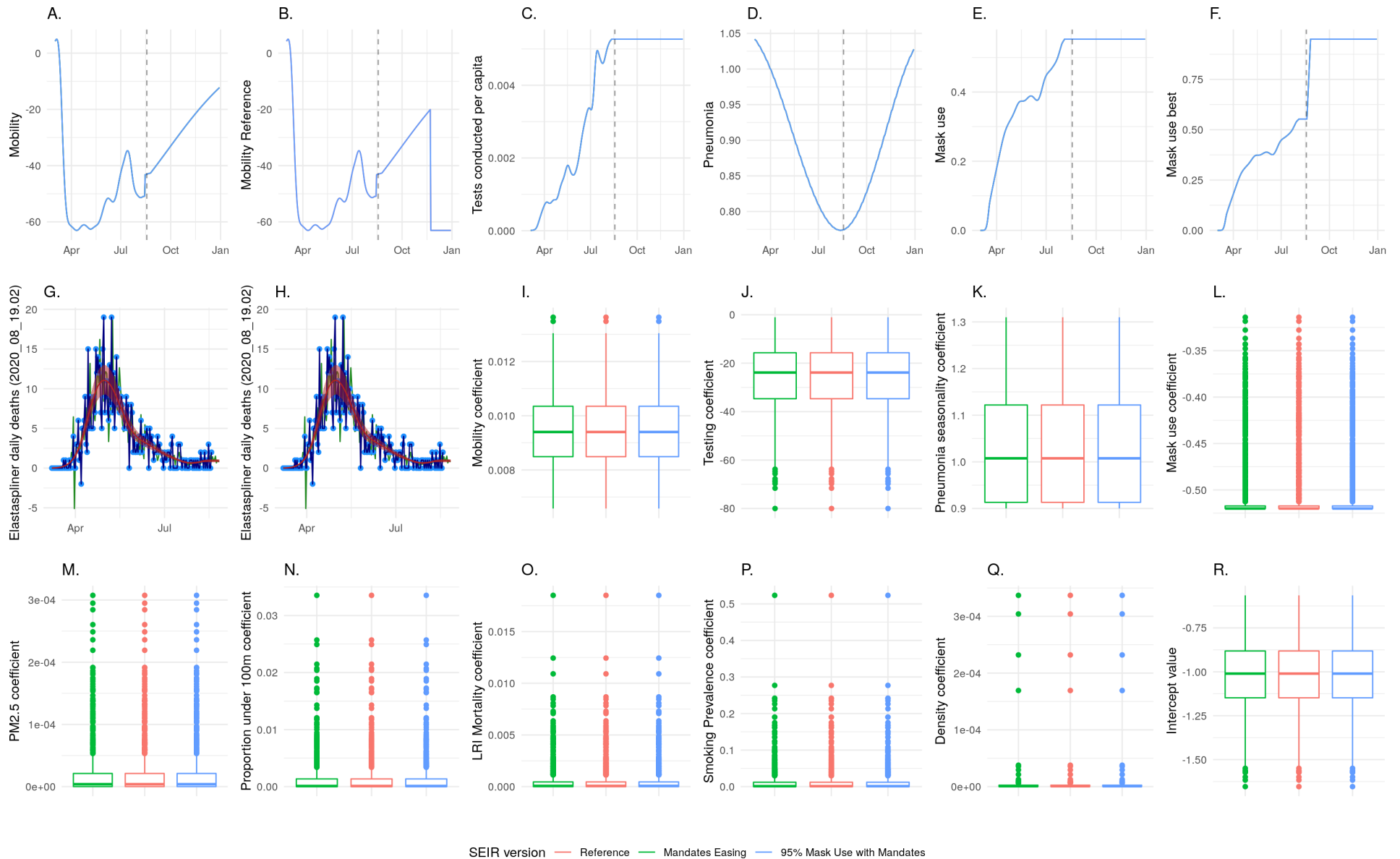
Delaware: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

19 District of Columbia: SEIR fit comparison



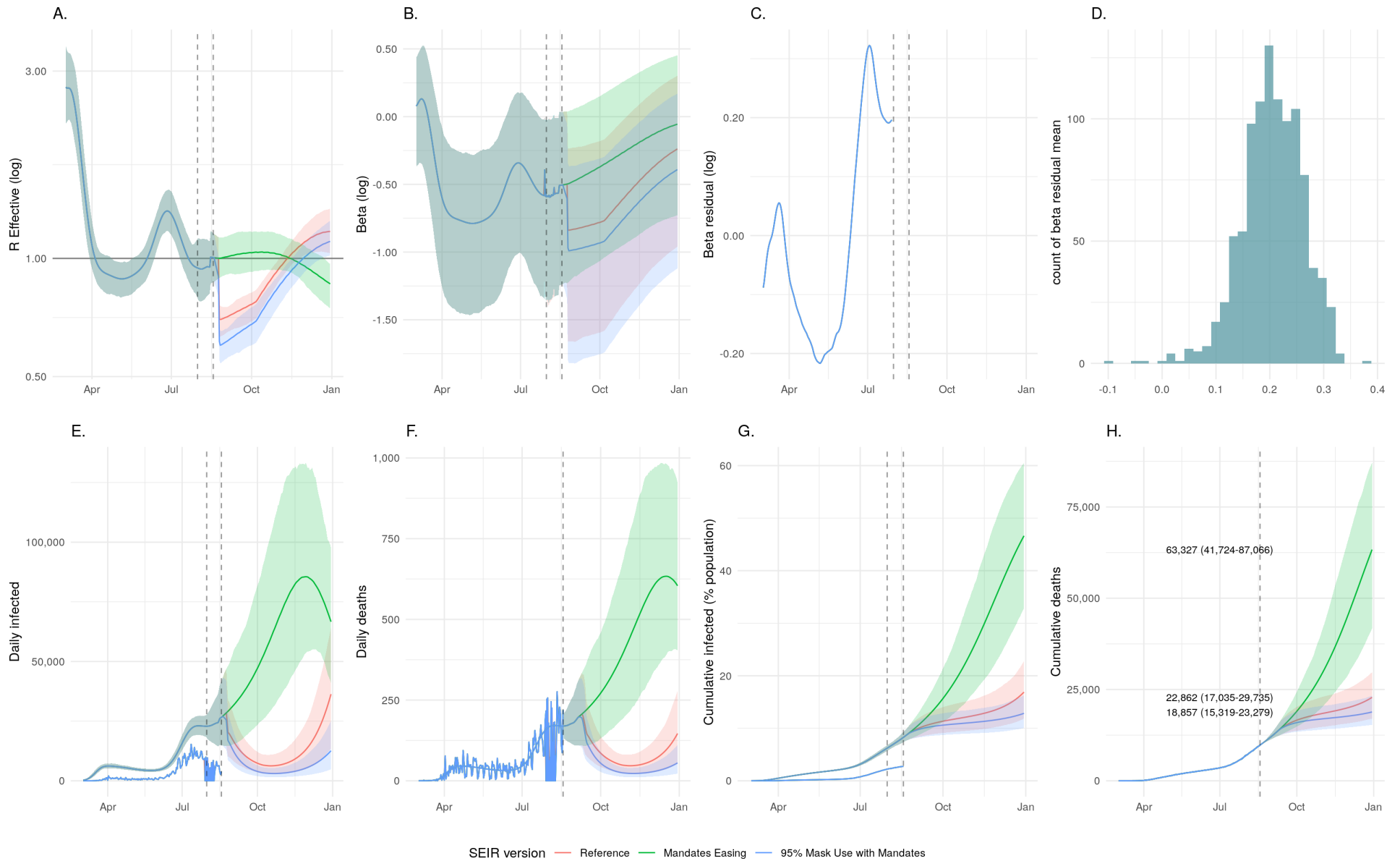
District of Columbia: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

20 District of Columbia: Covariate fits and regression coefficients



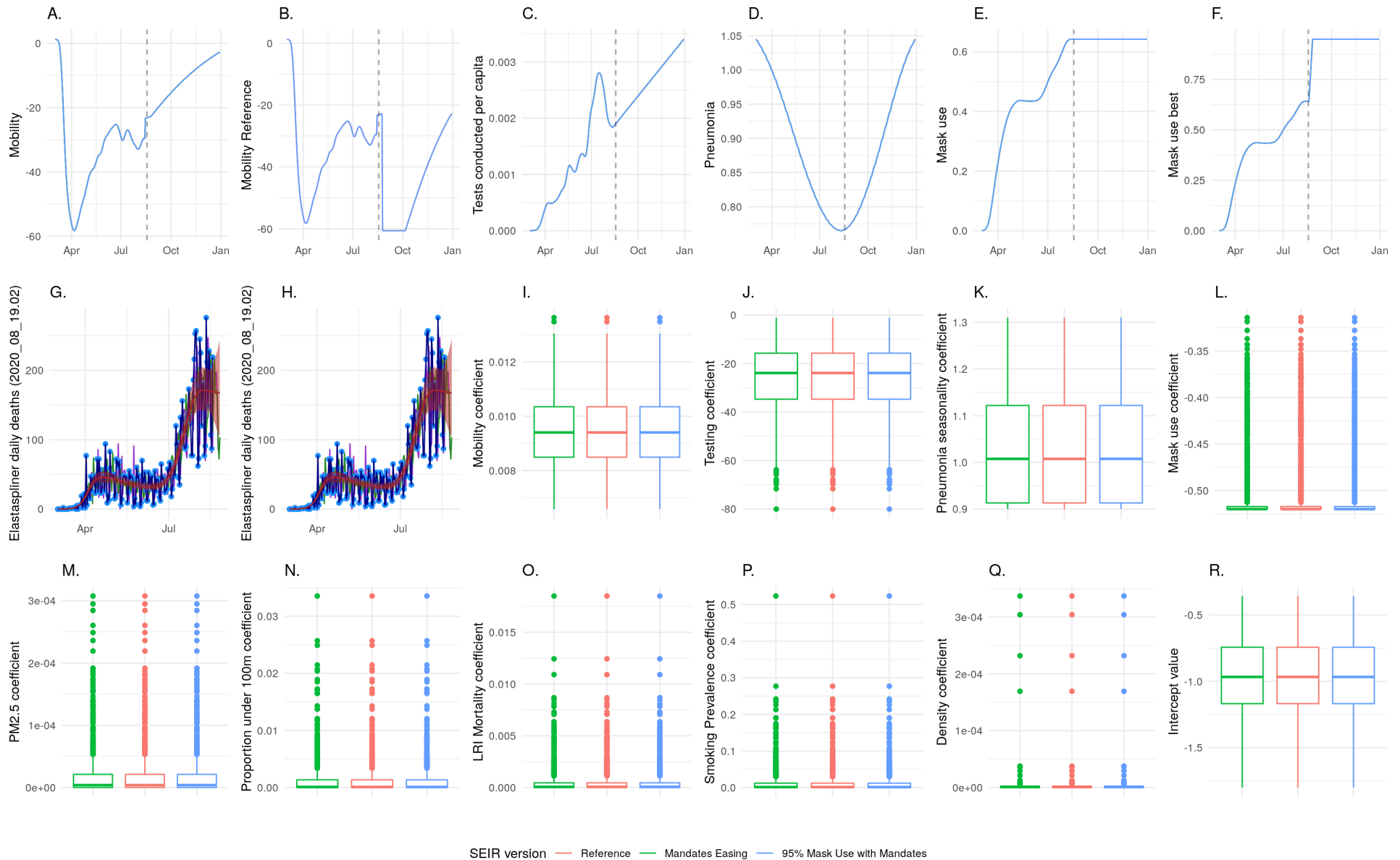
District of Columbia: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

21 Florida: SEIR fit comparison



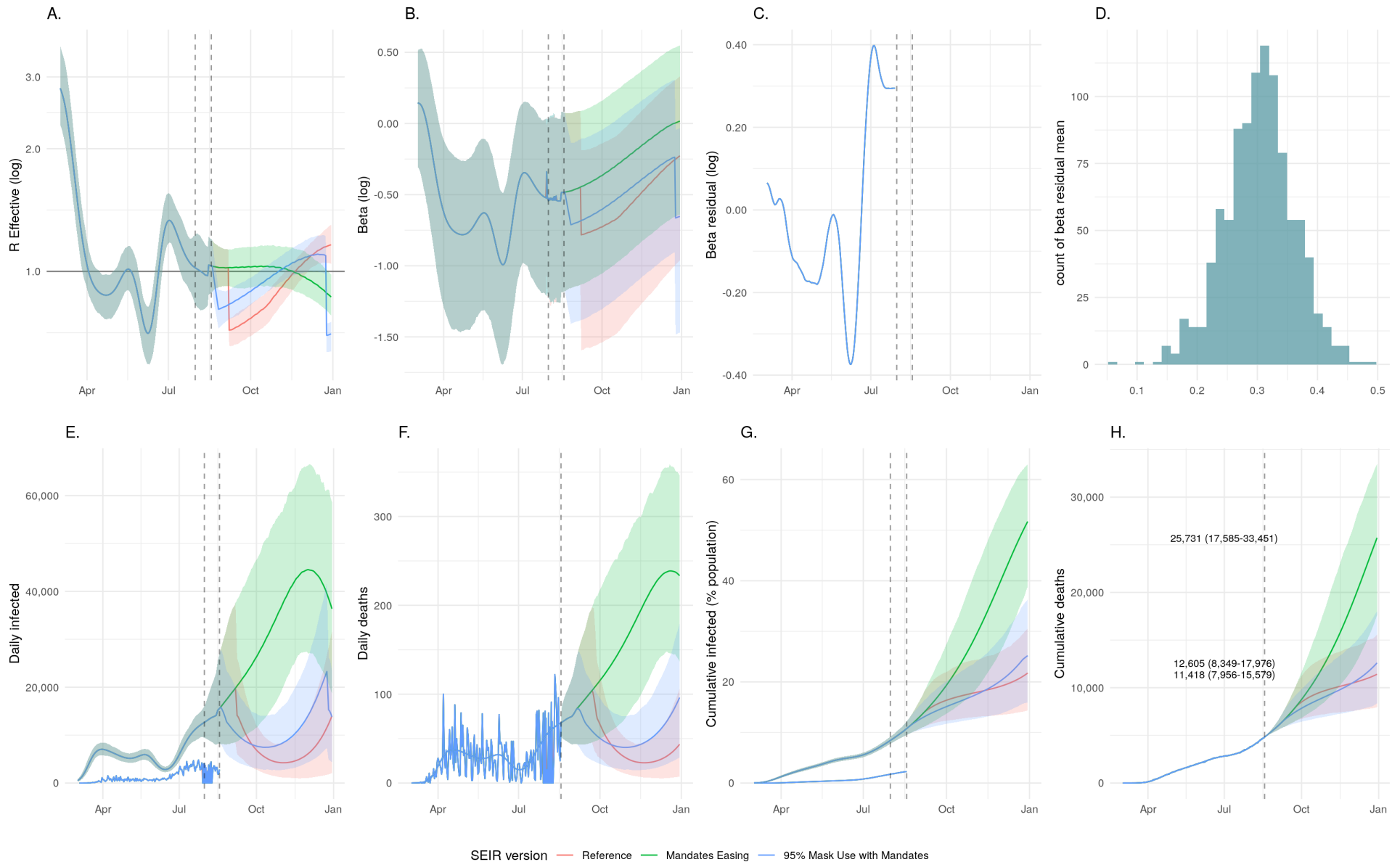
Florida: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

22 Florida: Covariate fits and regression coefficients



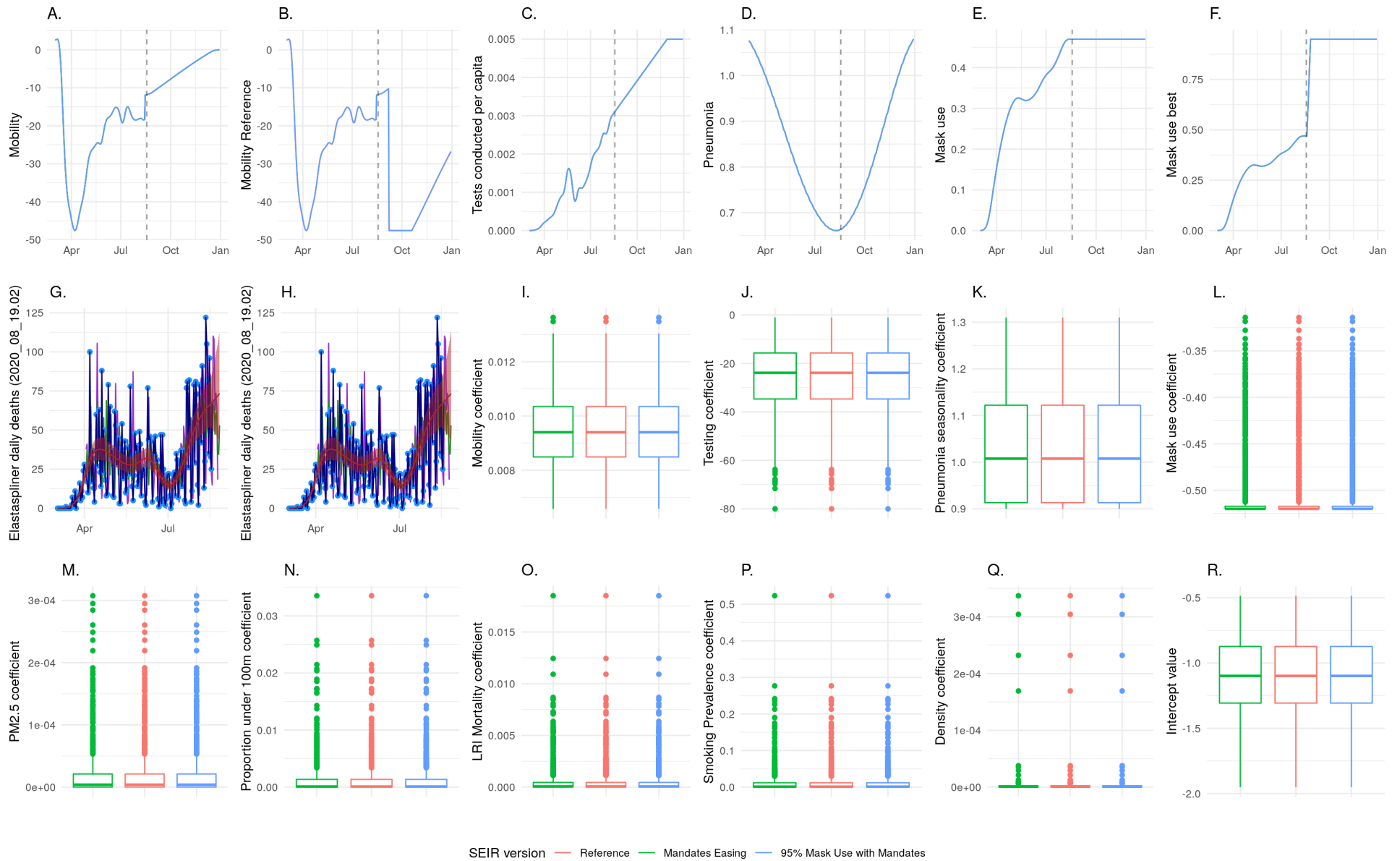
Florida: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

23 Georgia: SEIR fit comparison



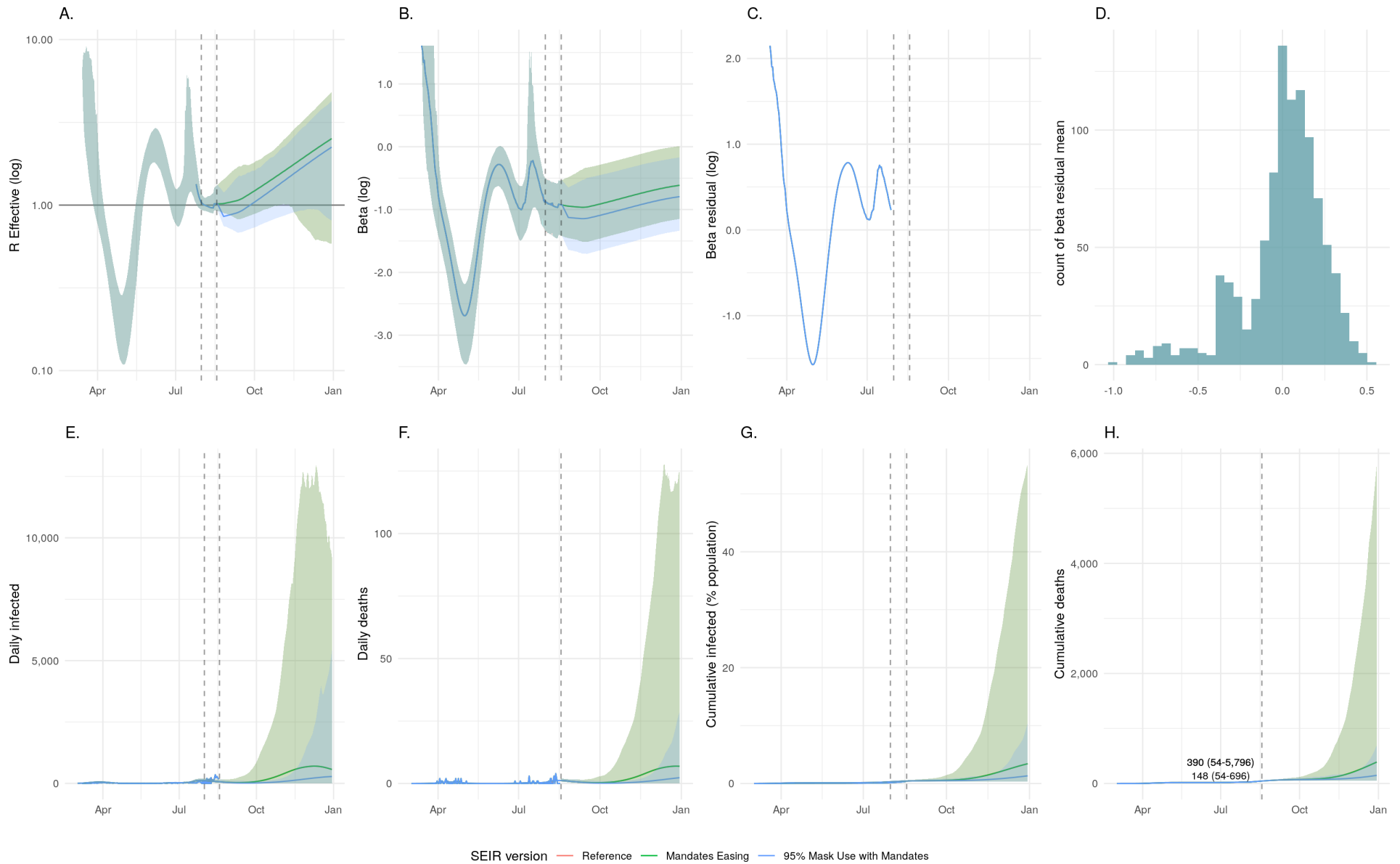
Georgia: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

24 Georgia: Covariate fits and regression coefficients



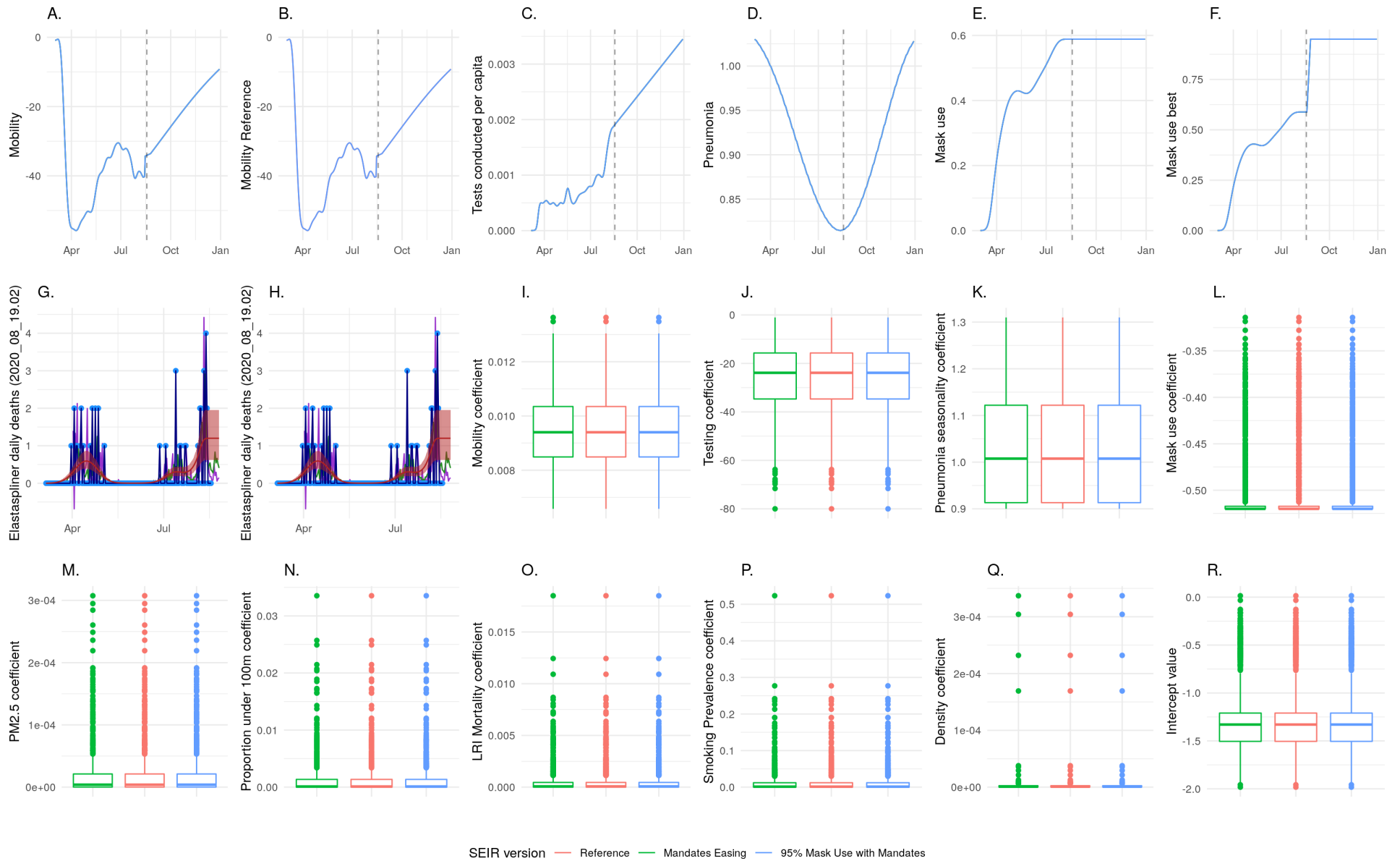
Georgia: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

25 Hawaii: SEIR fit comparison



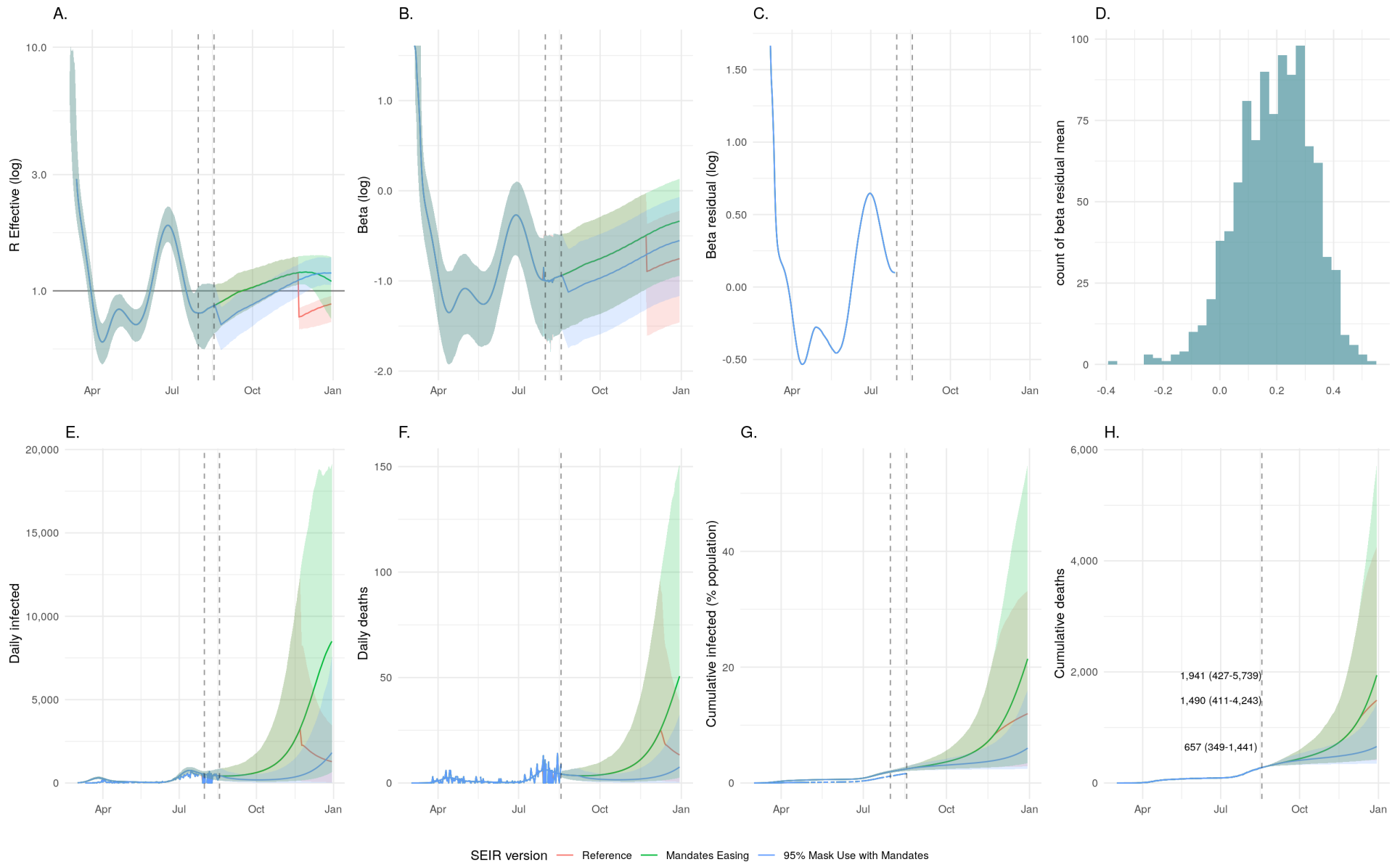
Hawaii: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

26 Hawaii: Covariate fits and regression coefficients



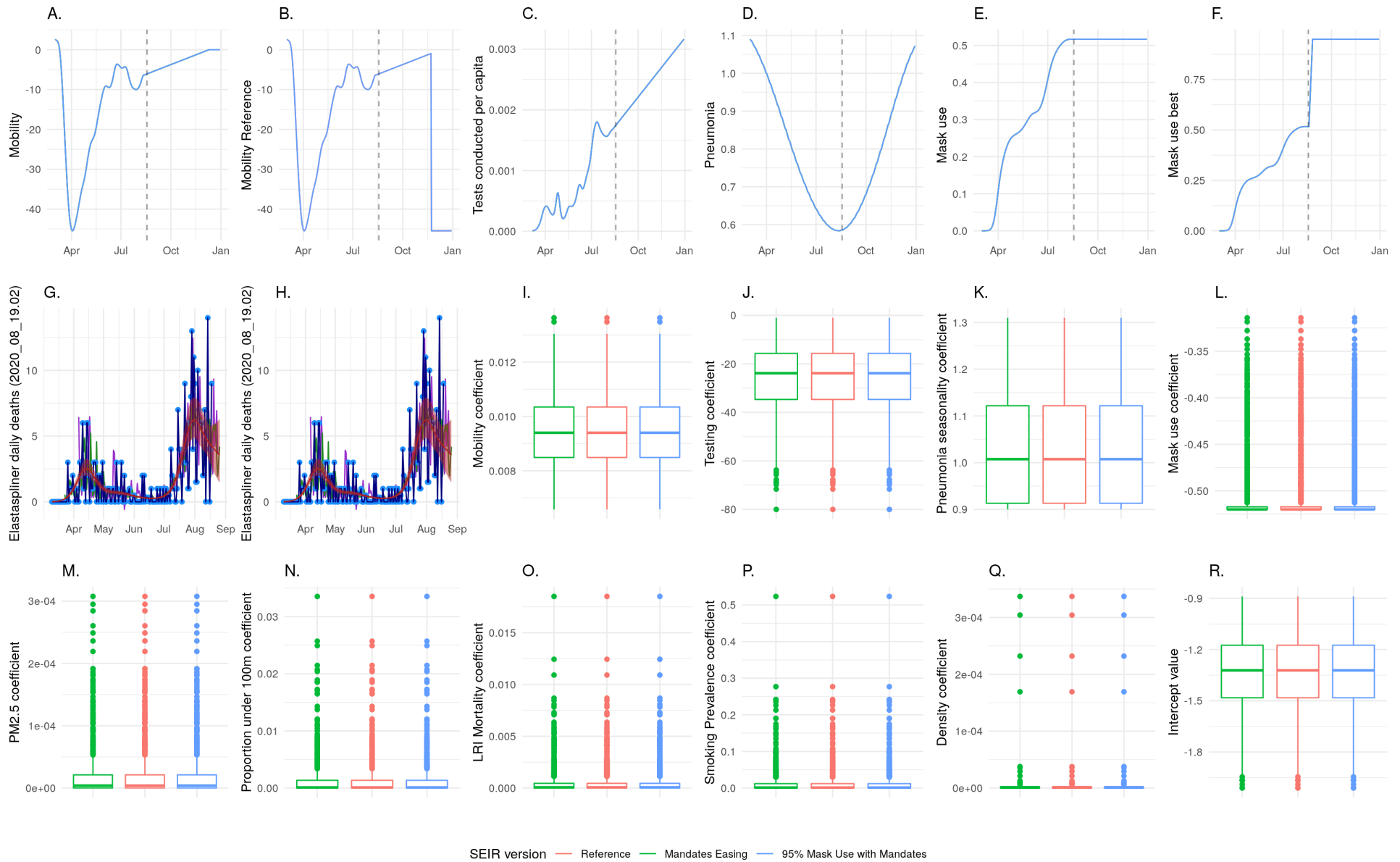
Hawaii: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

27 Idaho: SEIR fit comparison



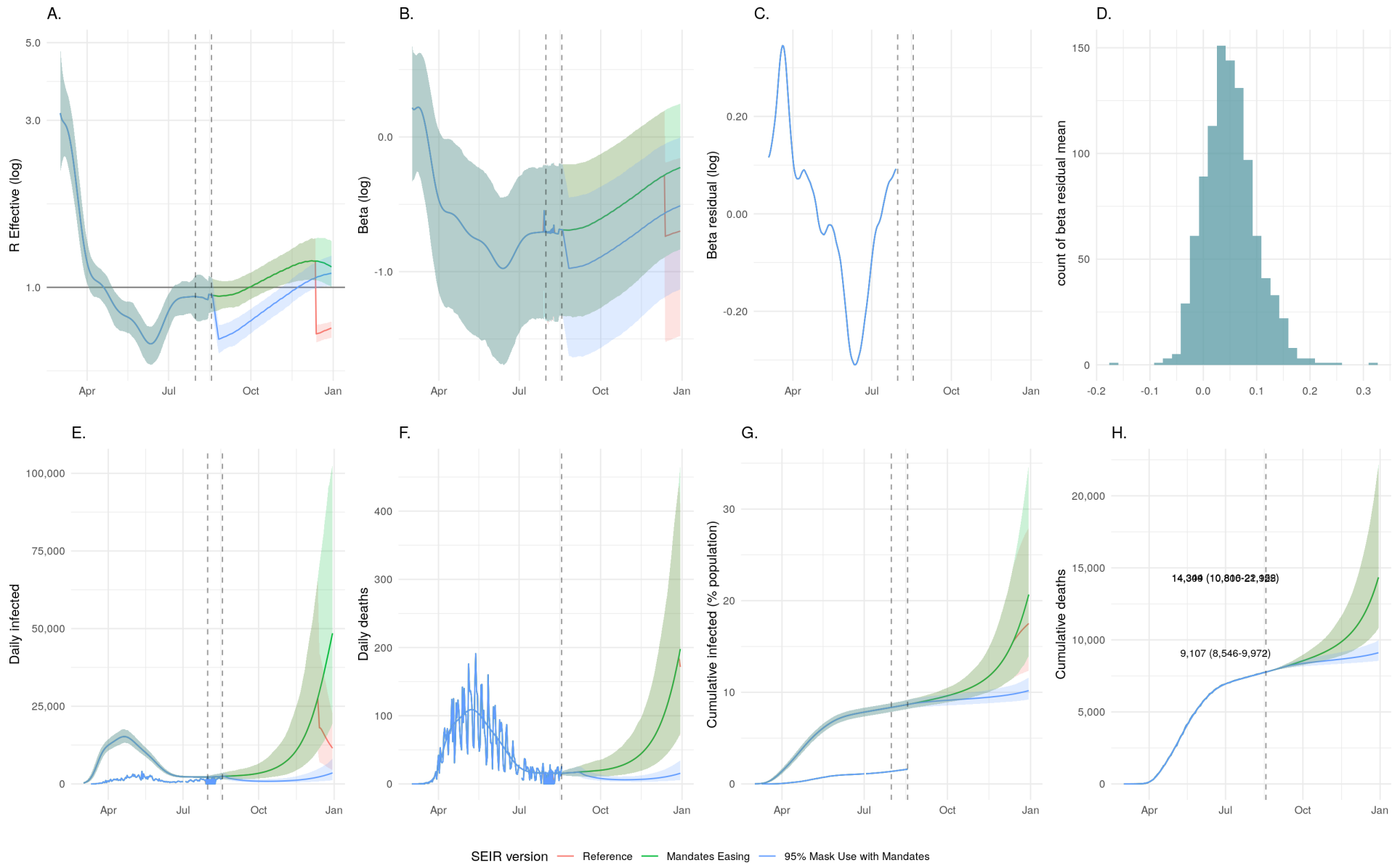
Idaho: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

28 Idaho: Covariate fits and regression coefficients



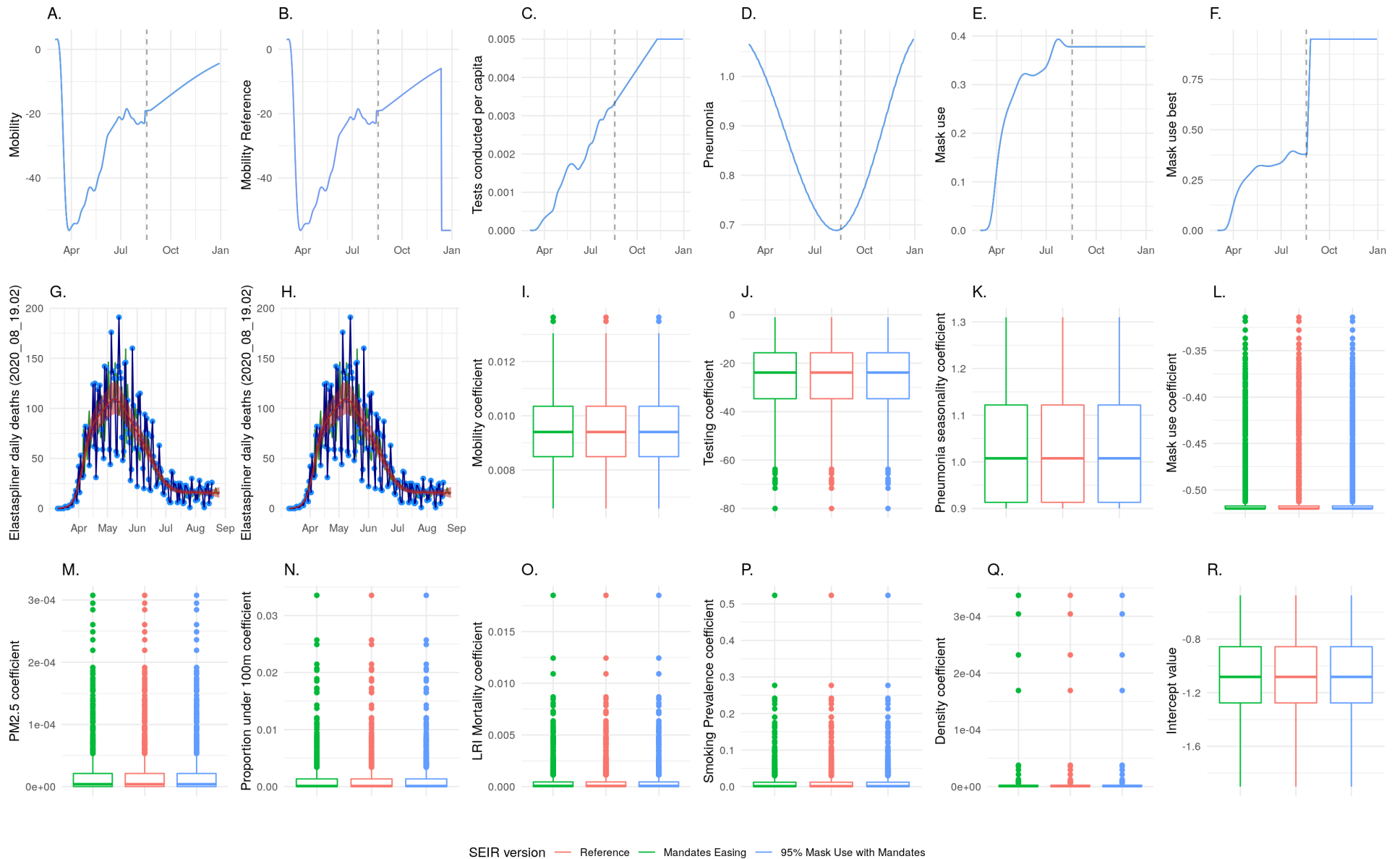
Idaho: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

29 Illinois: SEIR fit comparison



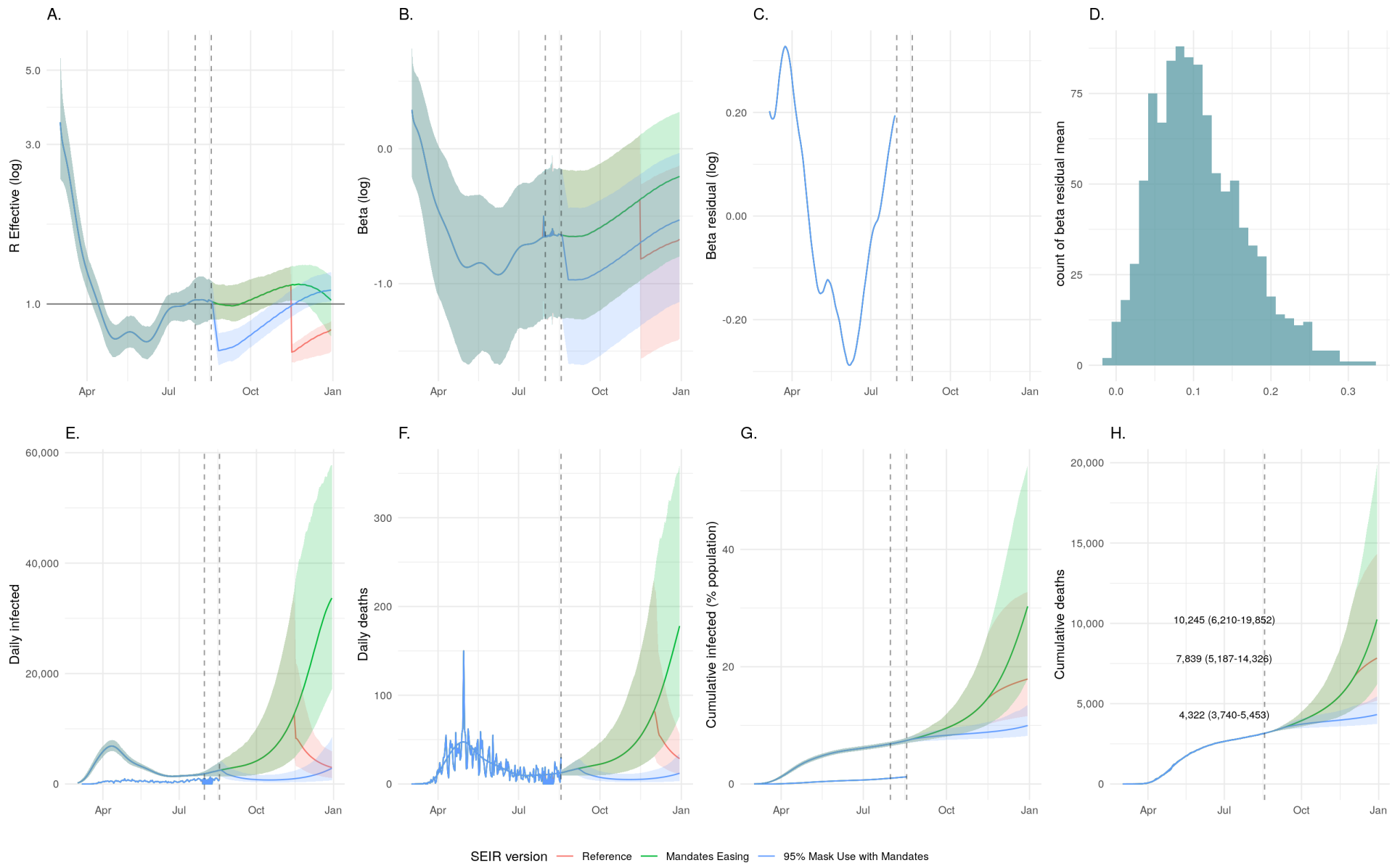
Illinois: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

30 Illinois: Covariate fits and regression coefficients



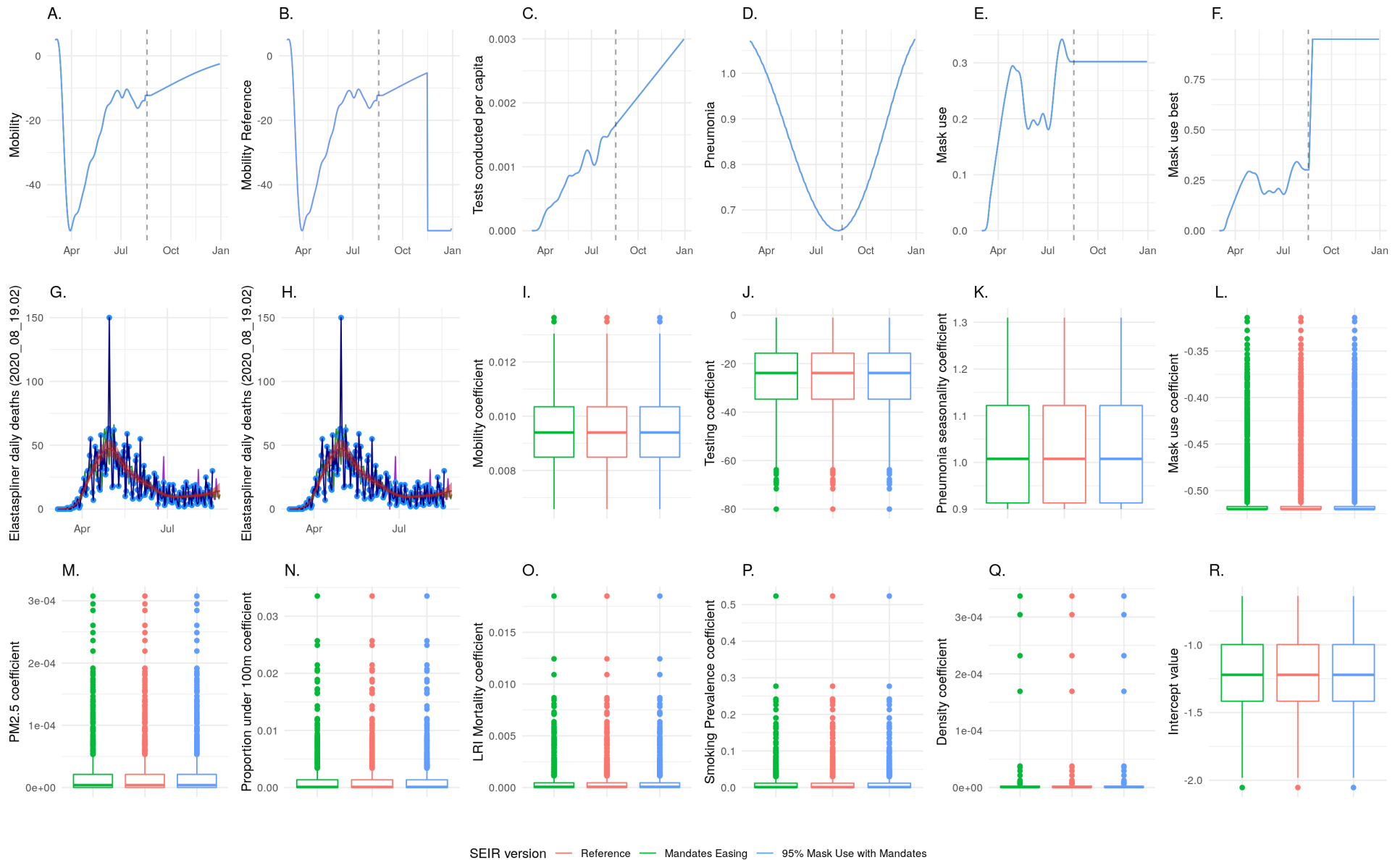
Illinois: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

31 Indiana: SEIR fit comparison



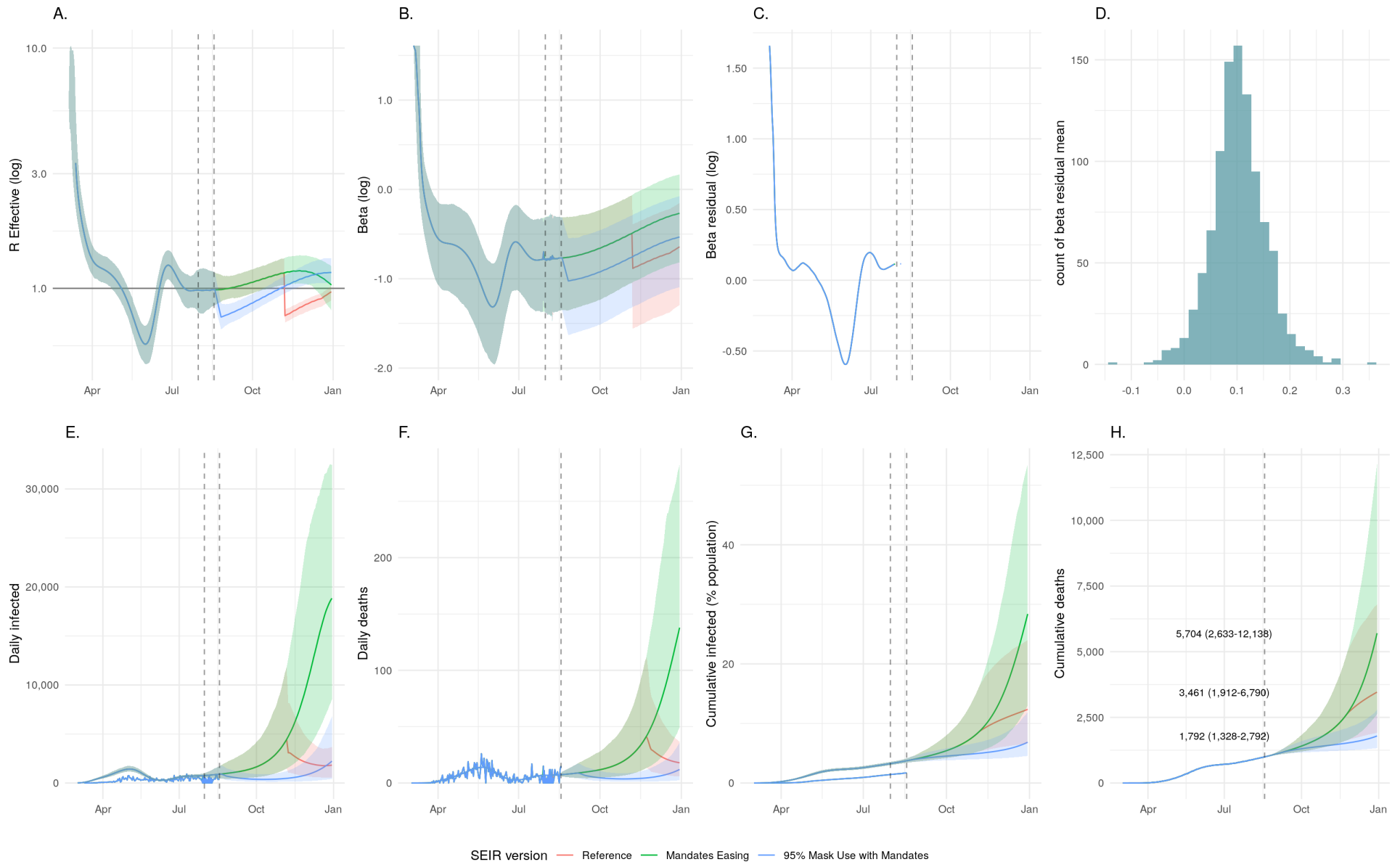
Indiana: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

32 Indiana: Covariate fits and regression coefficients



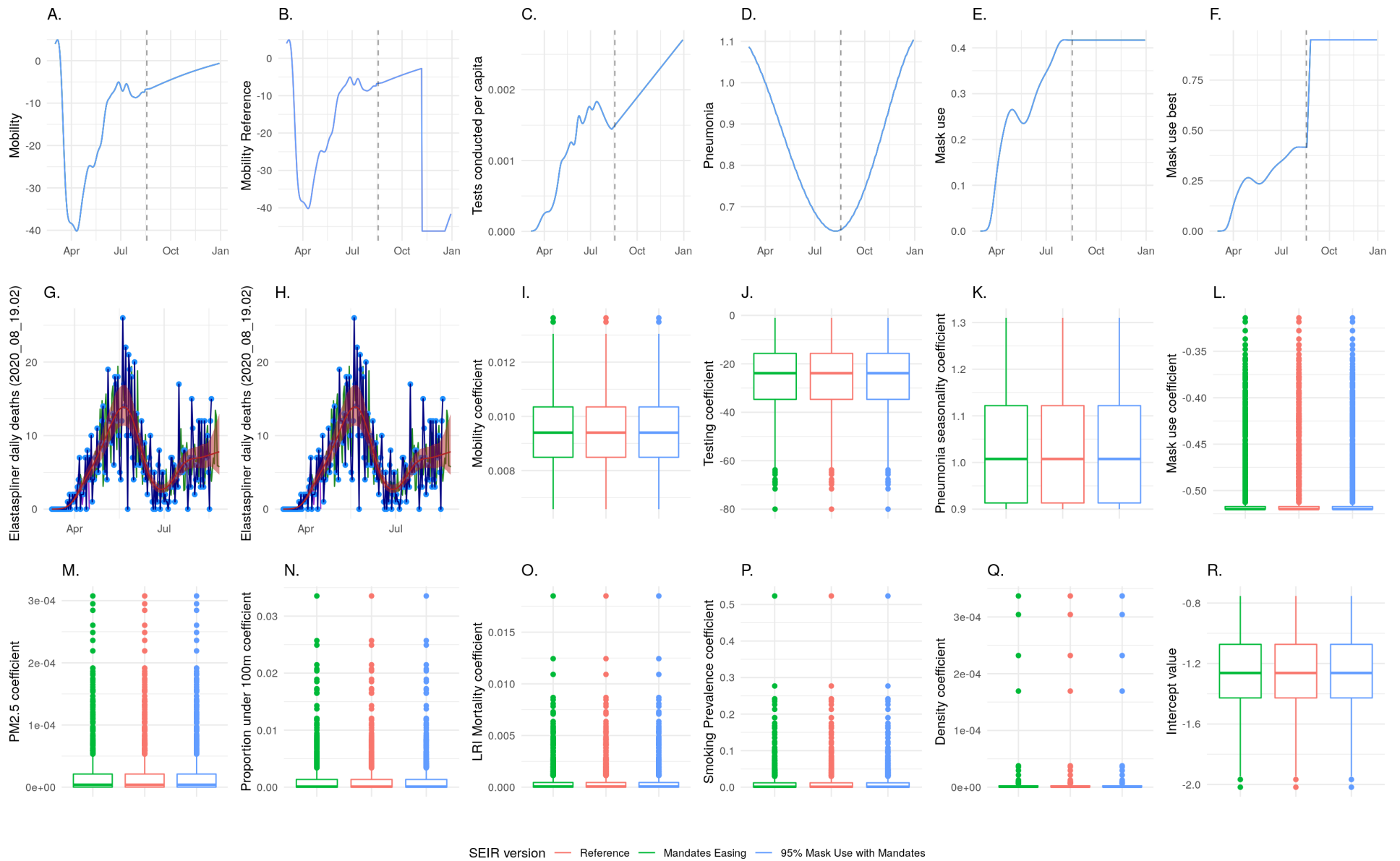
Indiana: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

33 Iowa: SEIR fit comparison



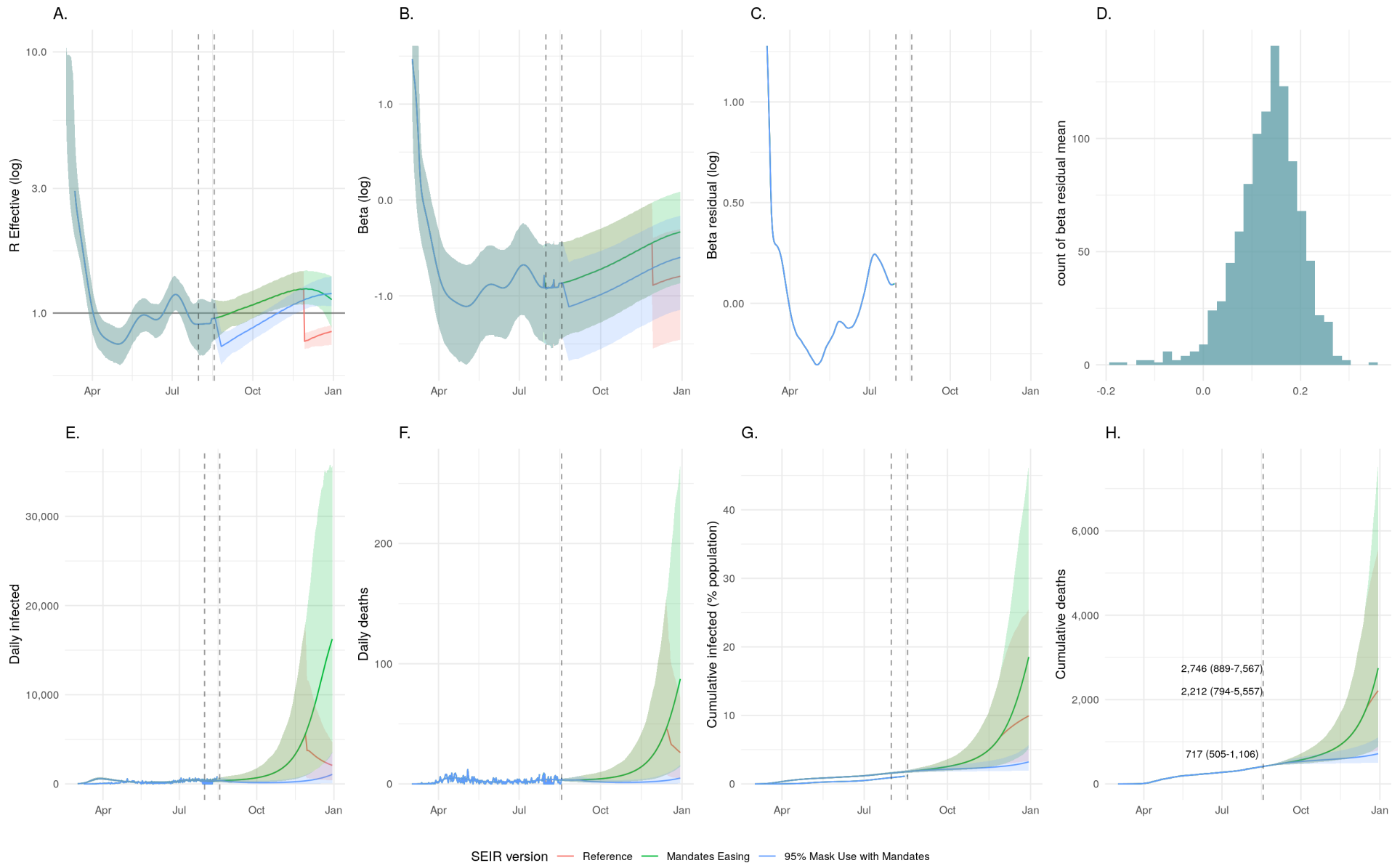
Iowa: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

34 Iowa: Covariate fits and regression coefficients



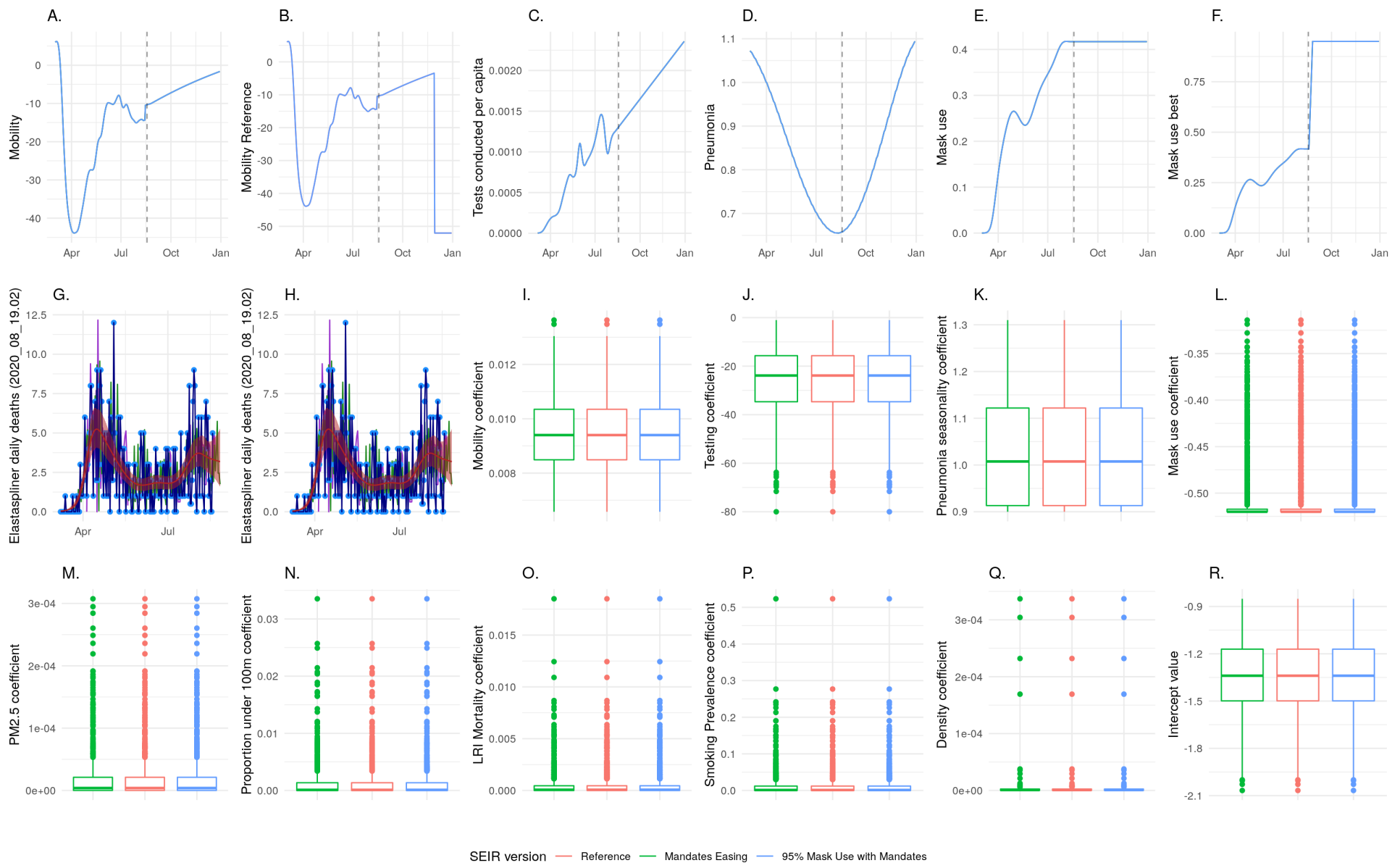
Iowa: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

35 Kansas: SEIR fit comparison



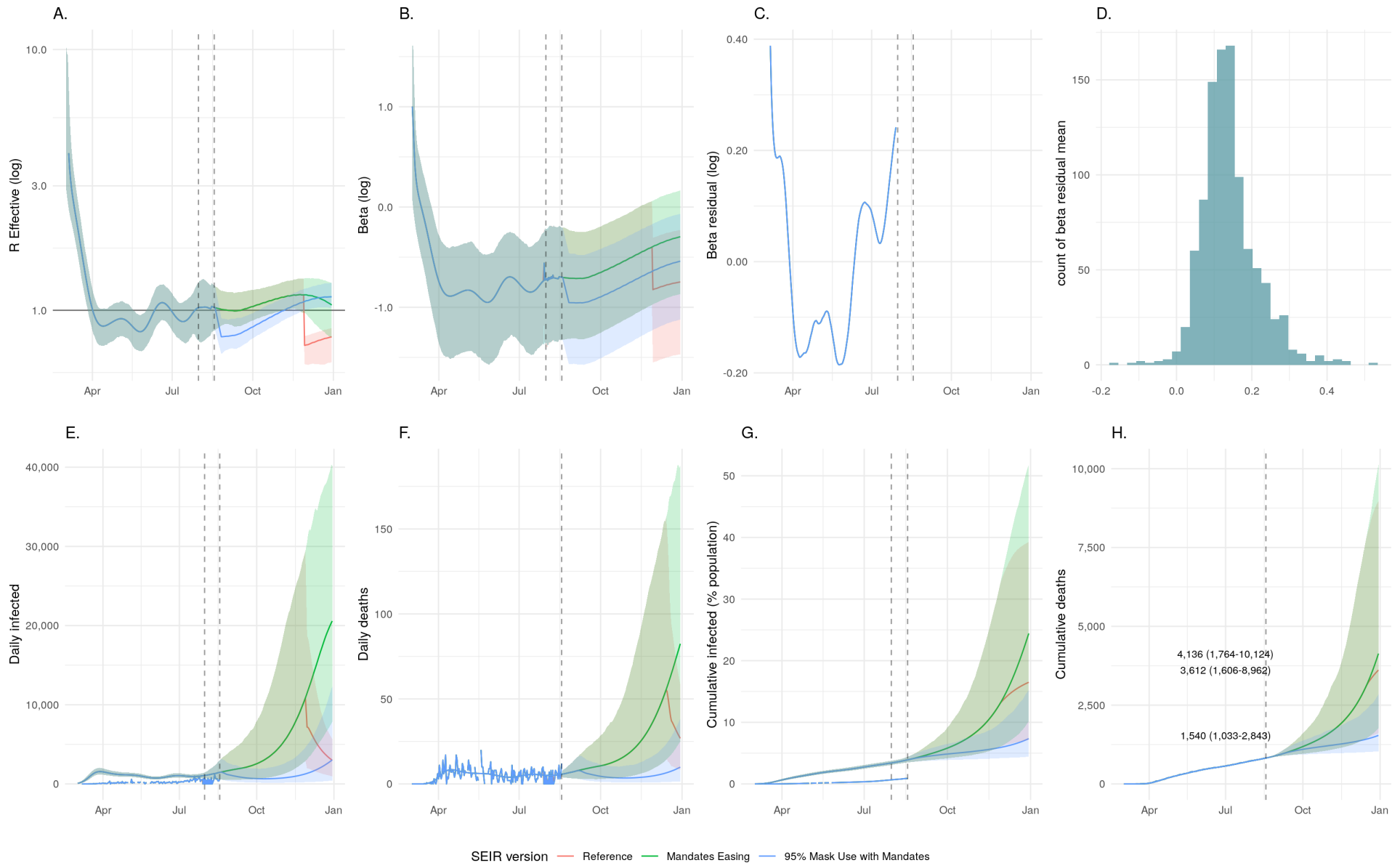
Kansas: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

36 Kansas: Covariate fits and regression coefficients



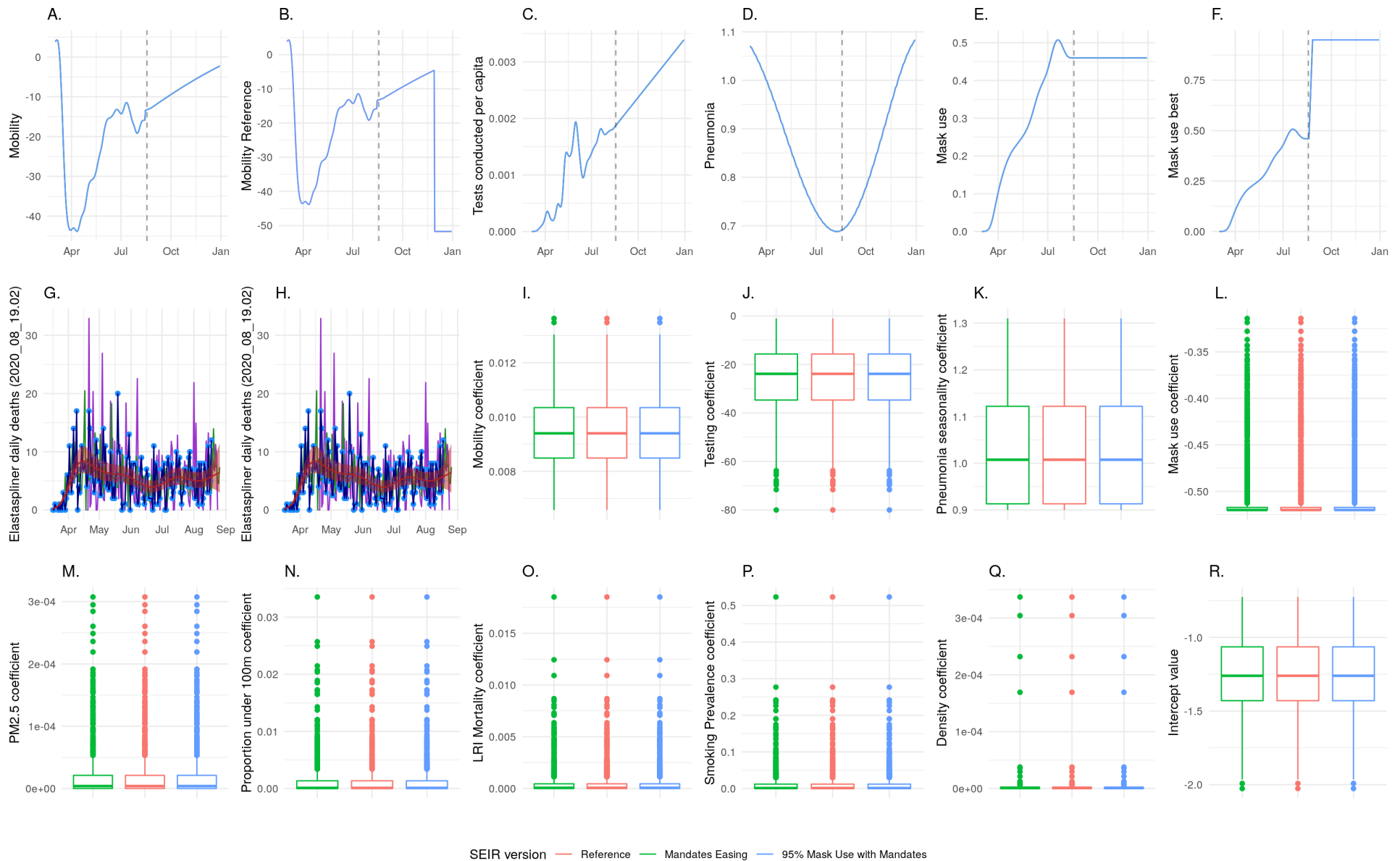
Kansas: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

37 Kentucky: SEIR fit comparison



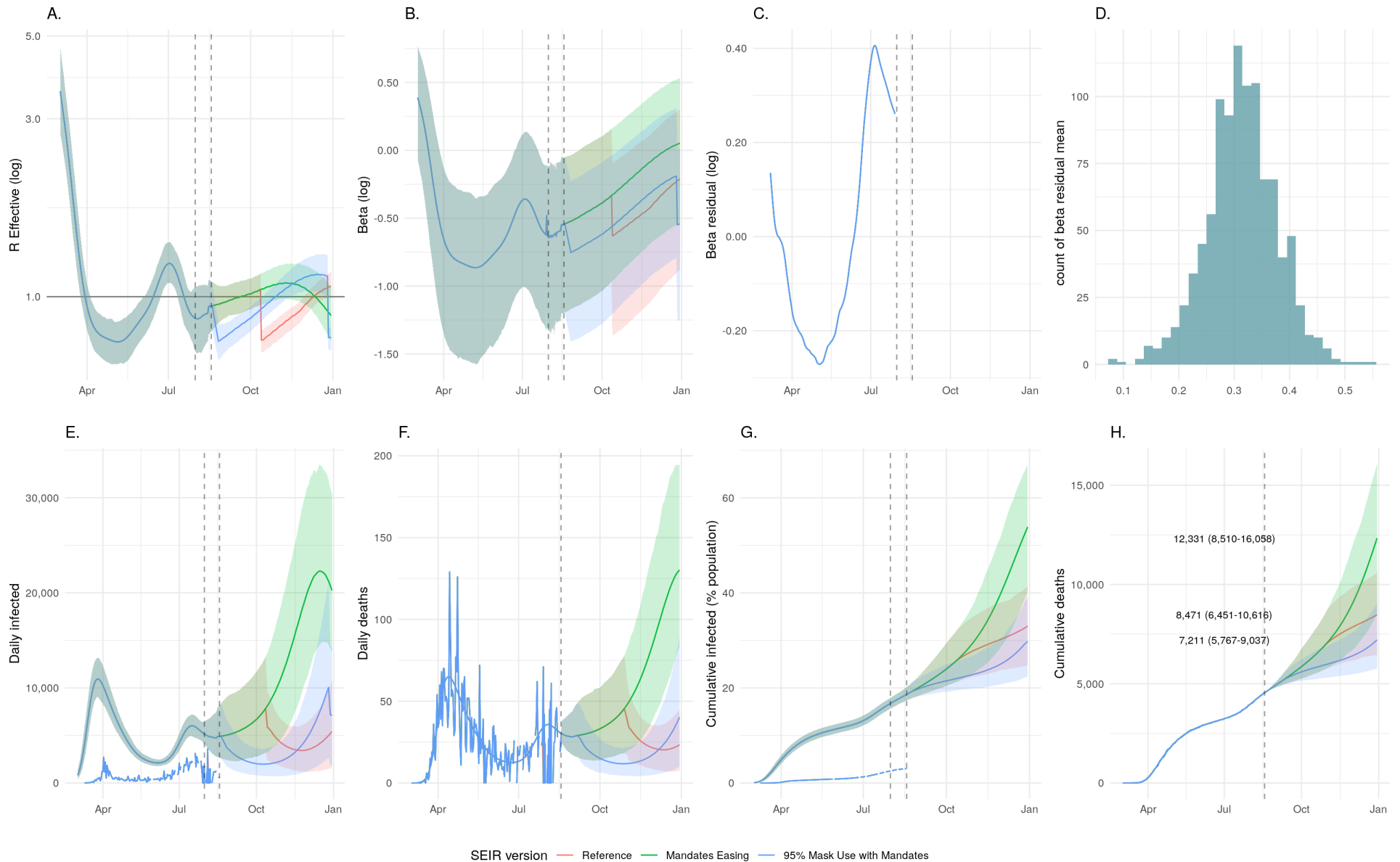
Kentucky: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

38 Kentucky: Covariate fits and regression coefficients



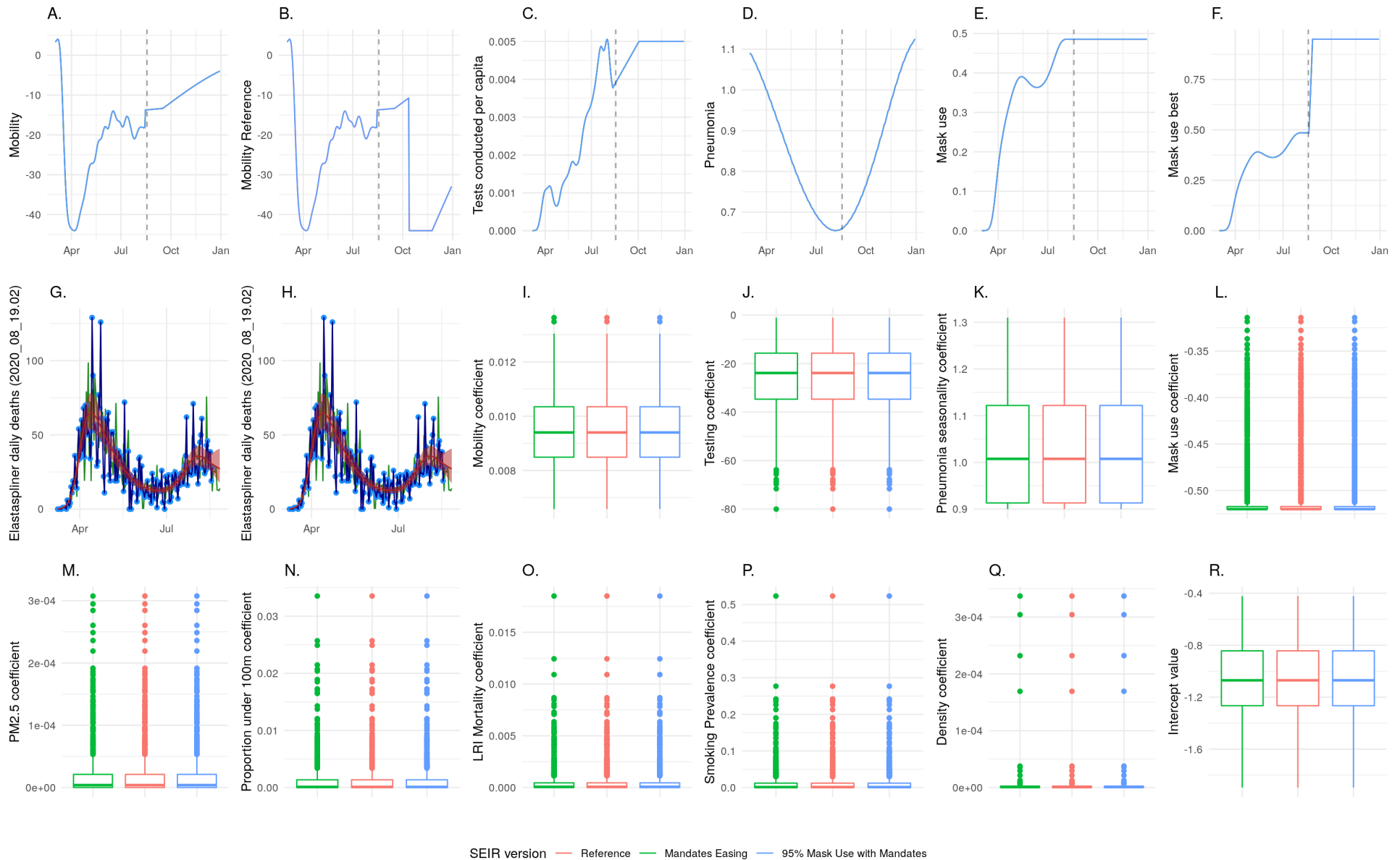
Kentucky: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

39 Louisiana: SEIR fit comparison



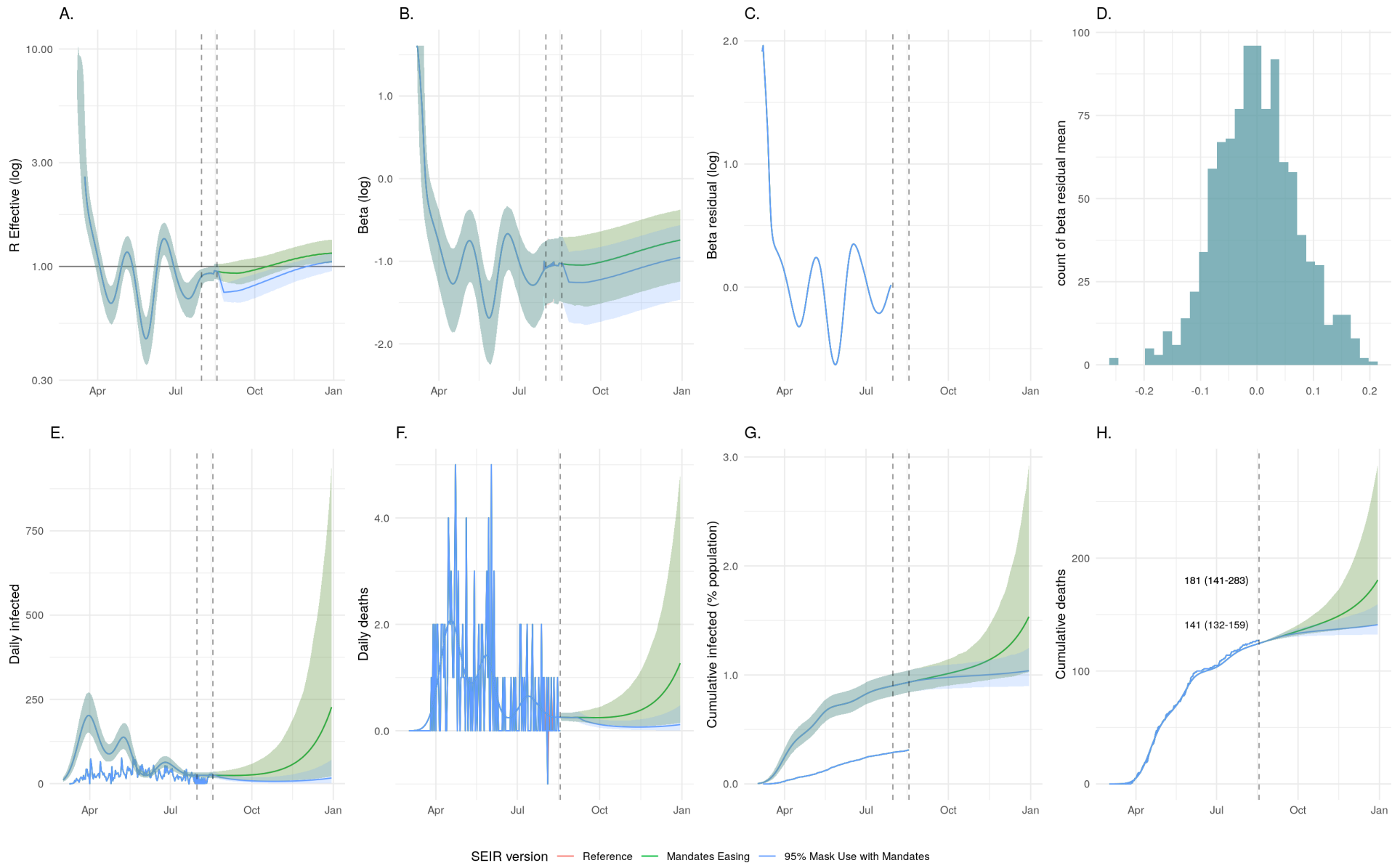
Louisiana: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

40 Louisiana: Covariate fits and regression coefficients



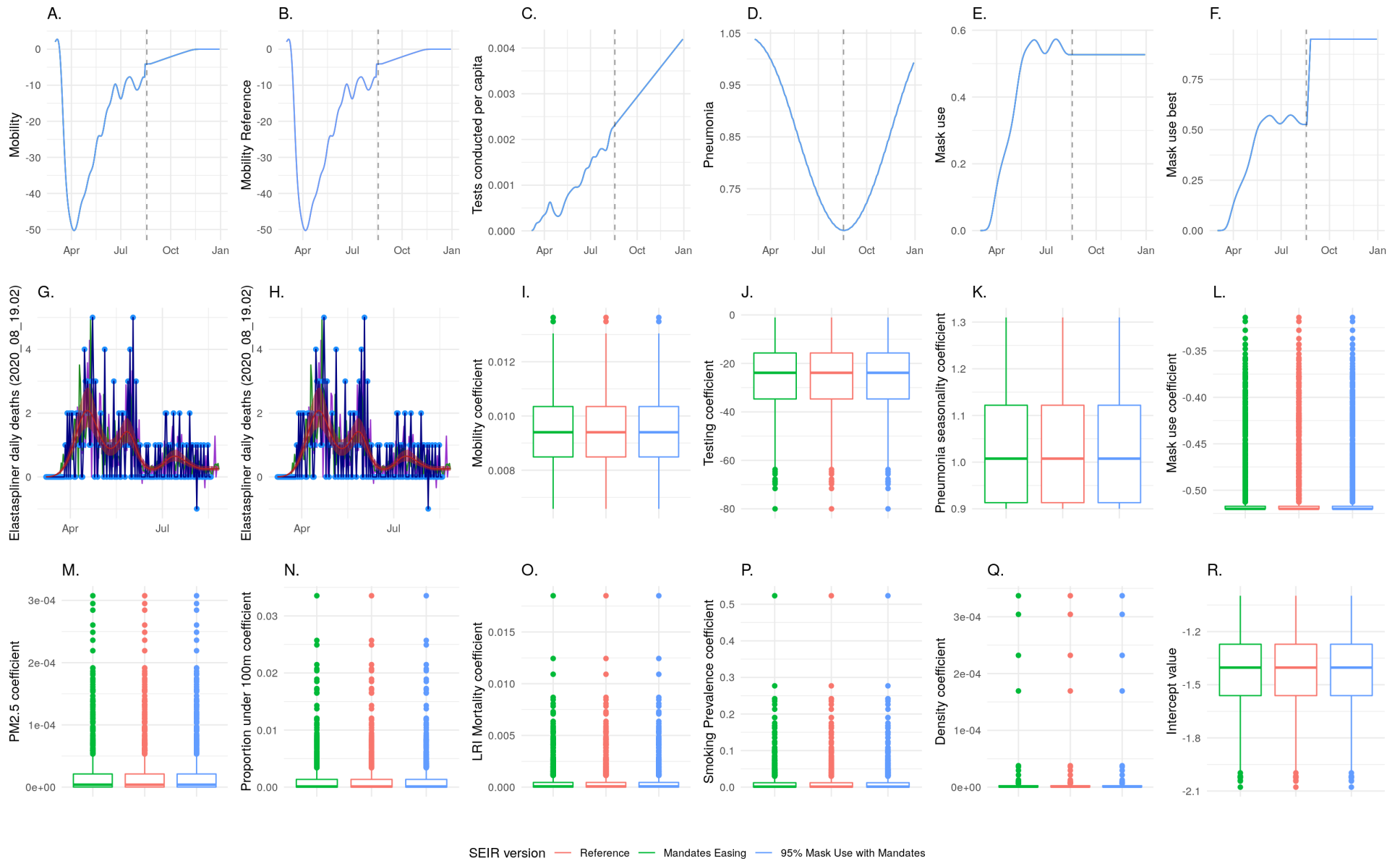
Louisiana: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

41 Maine: SEIR fit comparison



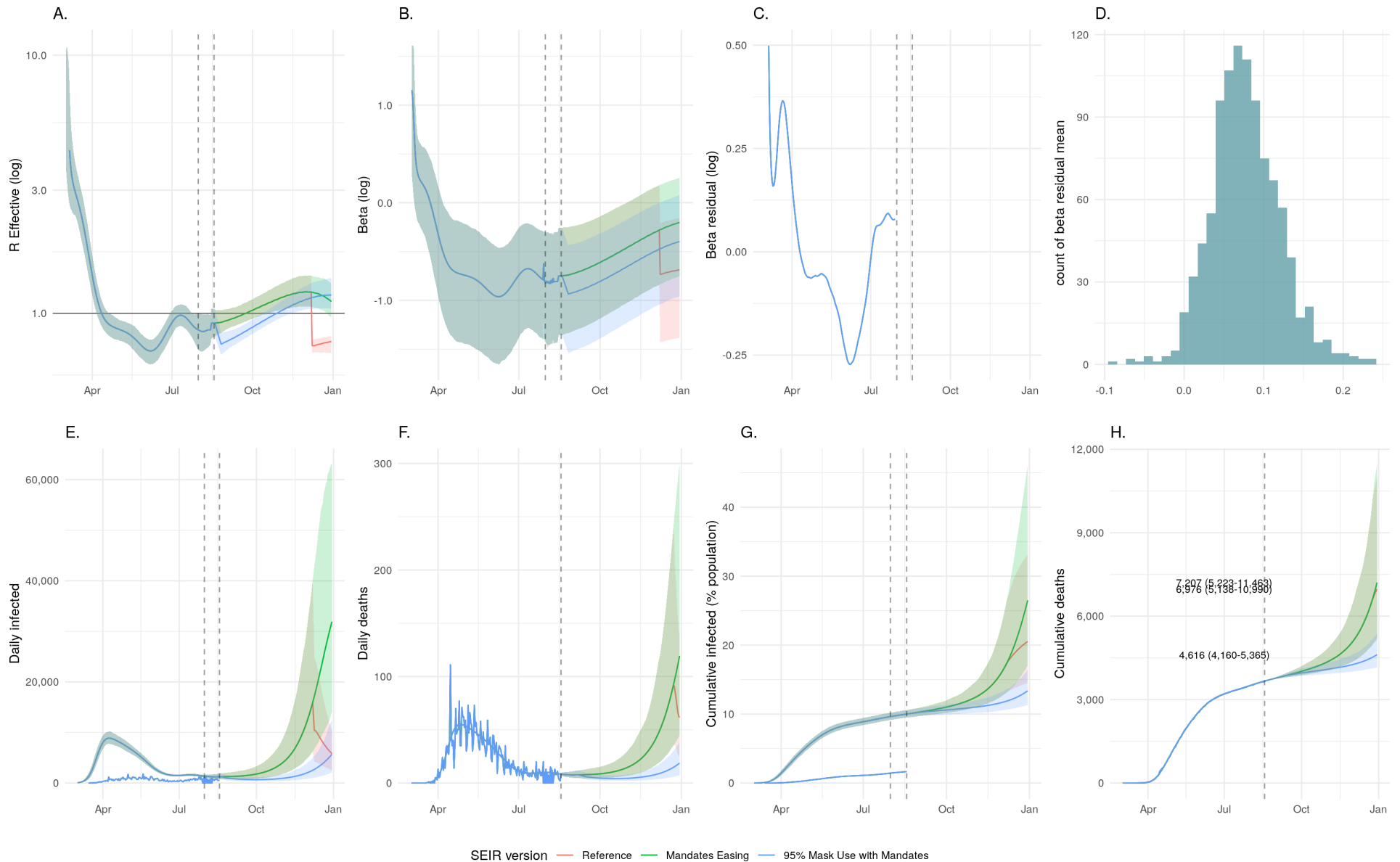
Maine: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

42 Maine: Covariate fits and regression coefficients



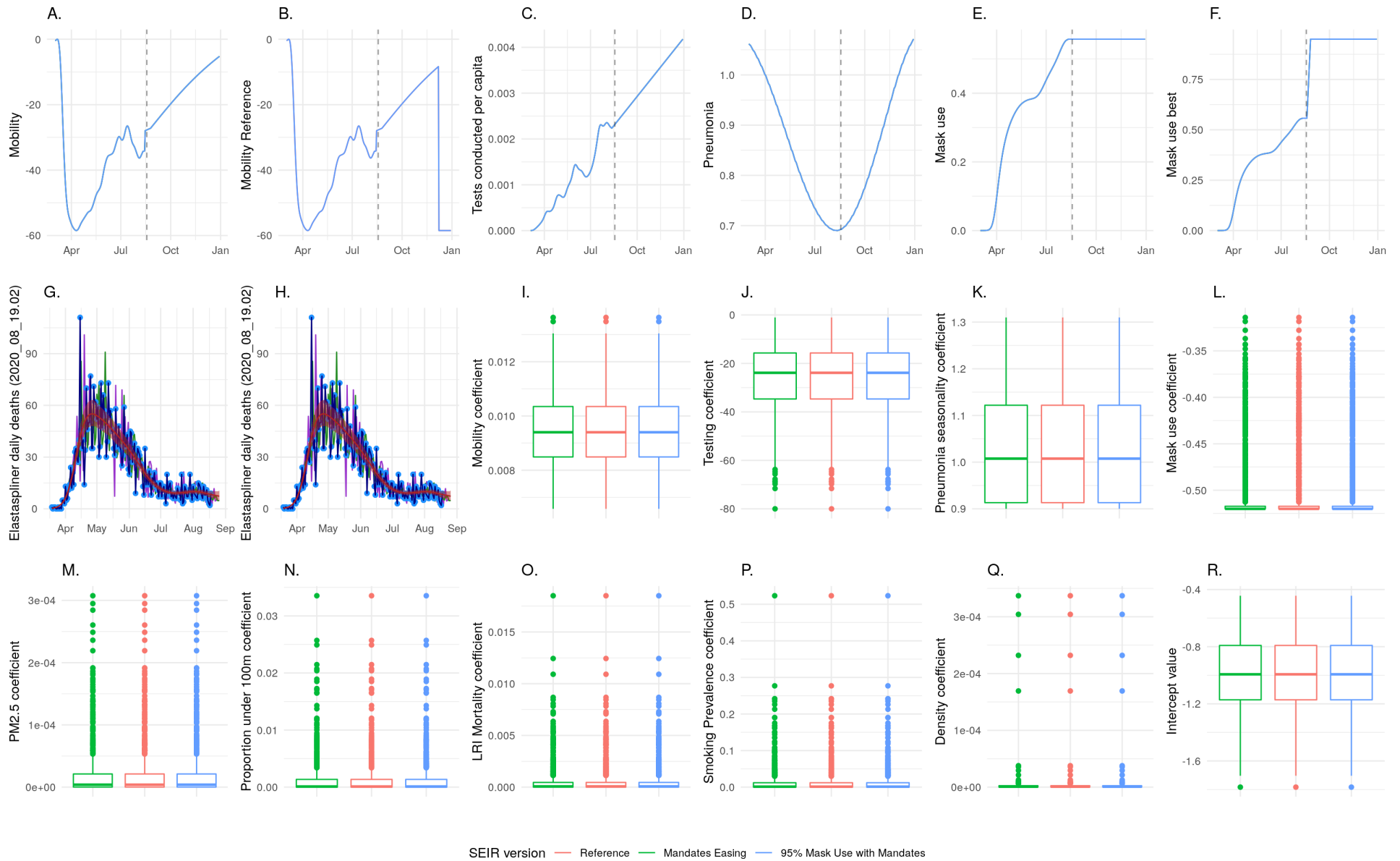
Maine: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

43 Maryland: SEIR fit comparison



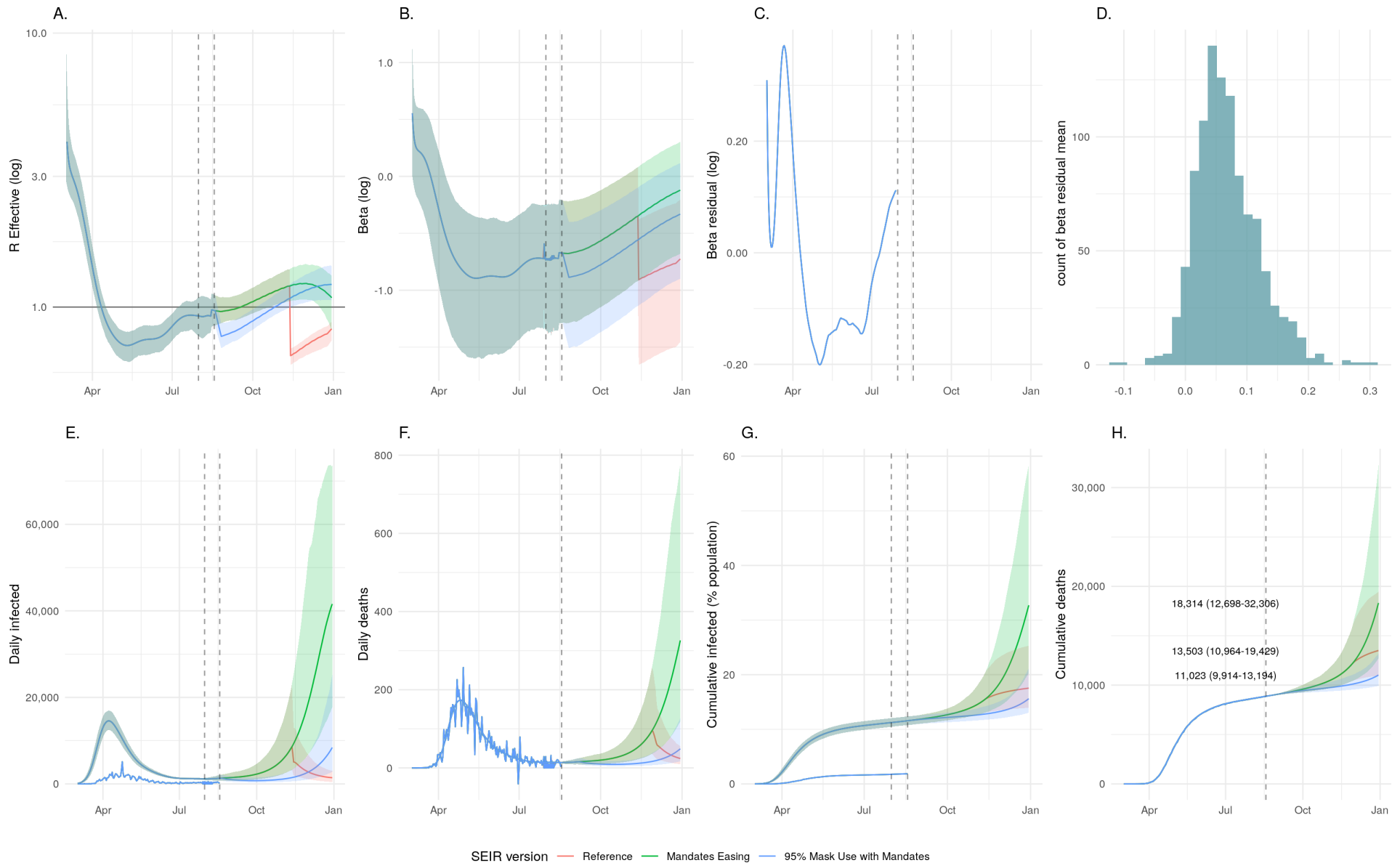
Maryland: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

44 Maryland: Covariate fits and regression coefficients



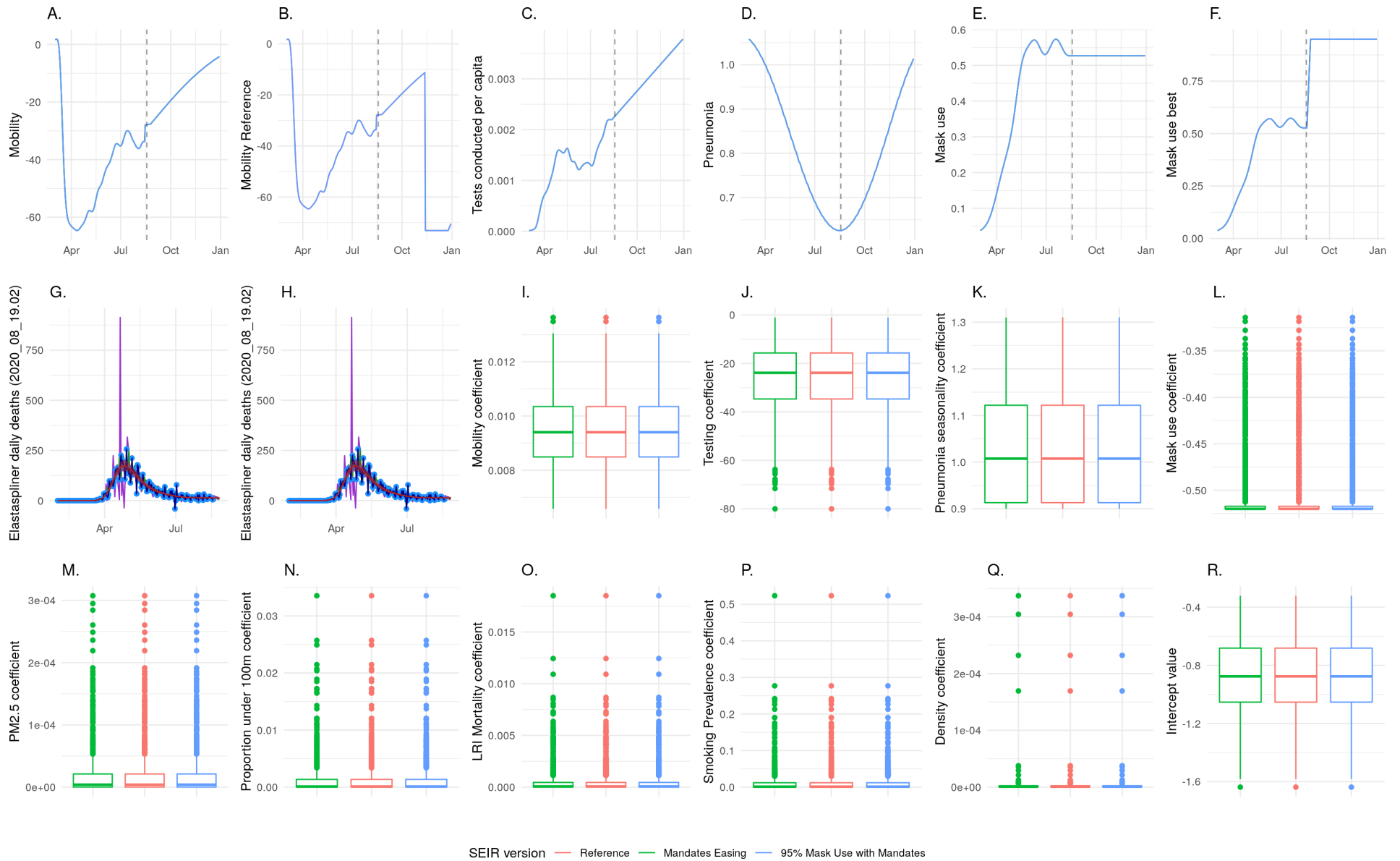
Maryland: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

45 Massachusetts: SEIR fit comparison



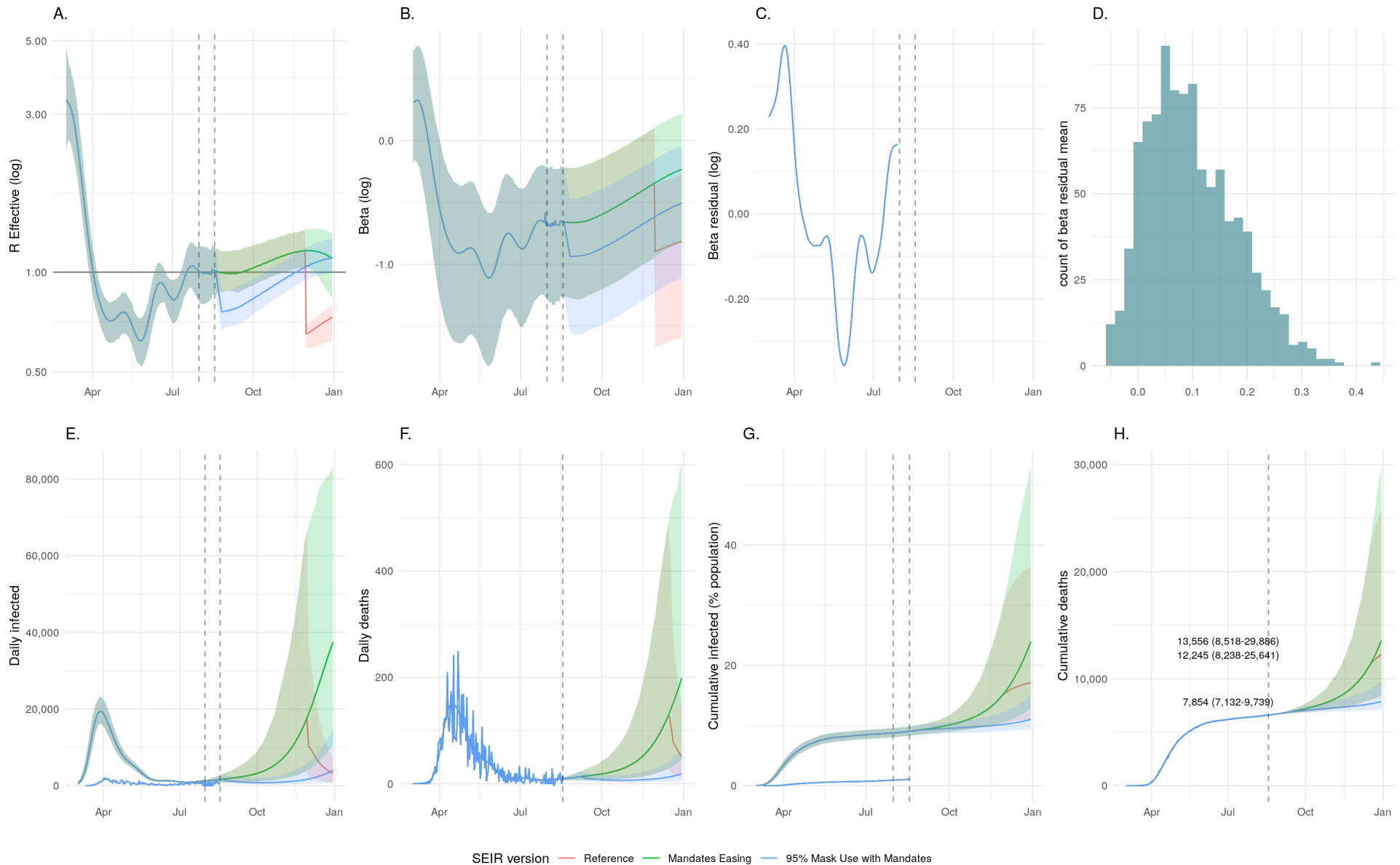
Massachusetts: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

46 Massachusetts: Covariate fits and regression coefficients



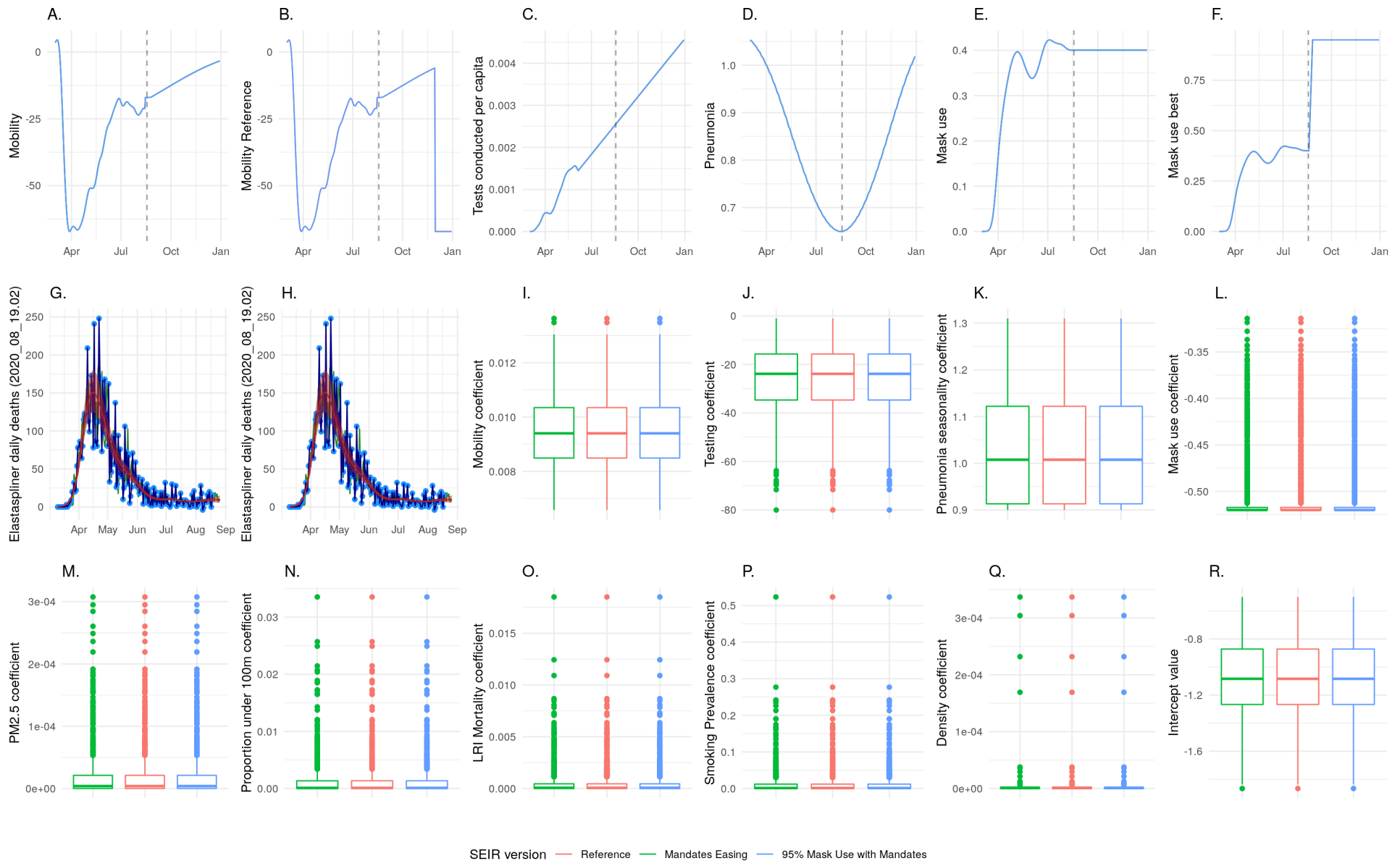
Massachusetts: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

47 Michigan: SEIR fit comparison



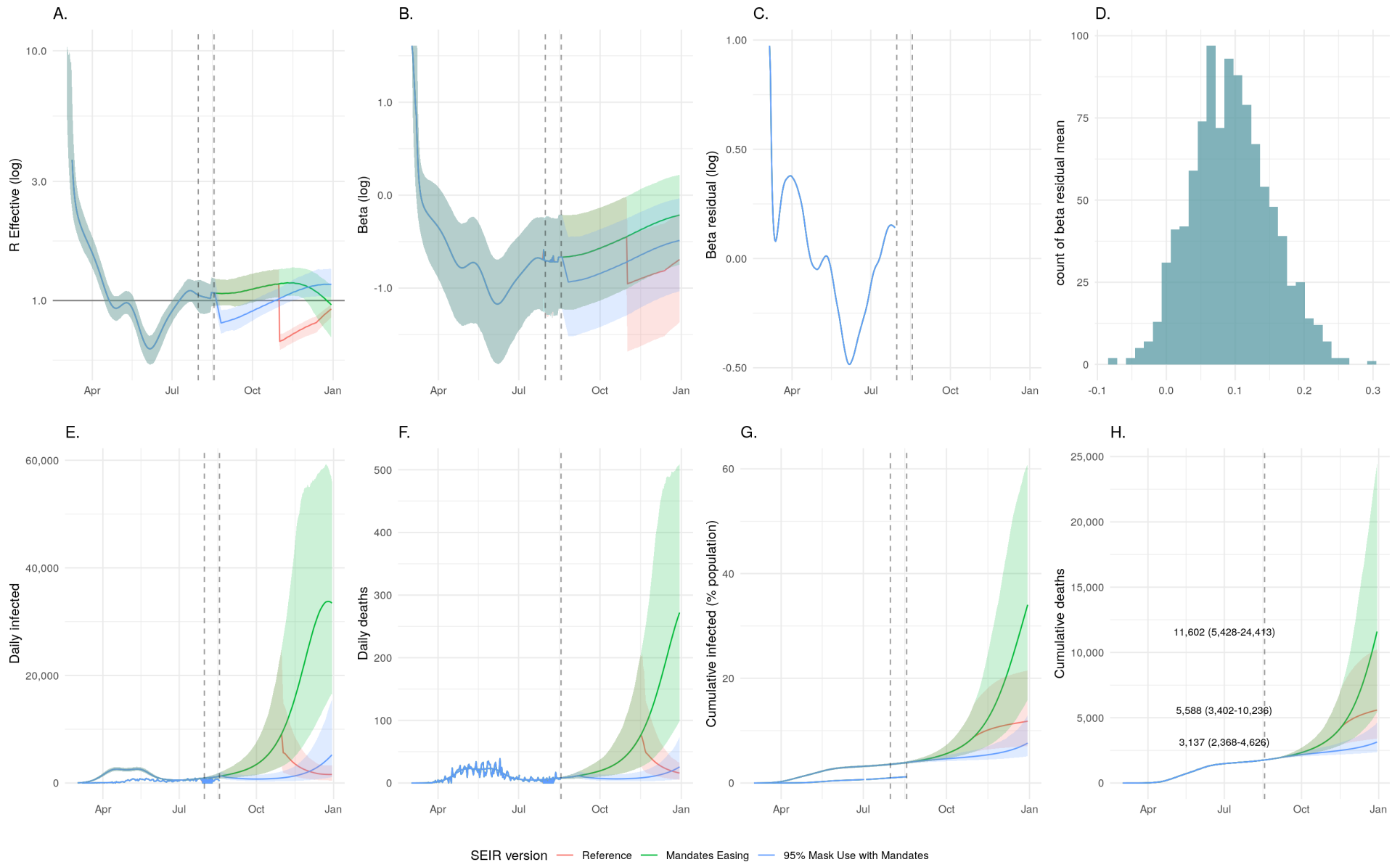
Michigan: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

48 Michigan: Covariate fits and regression coefficients



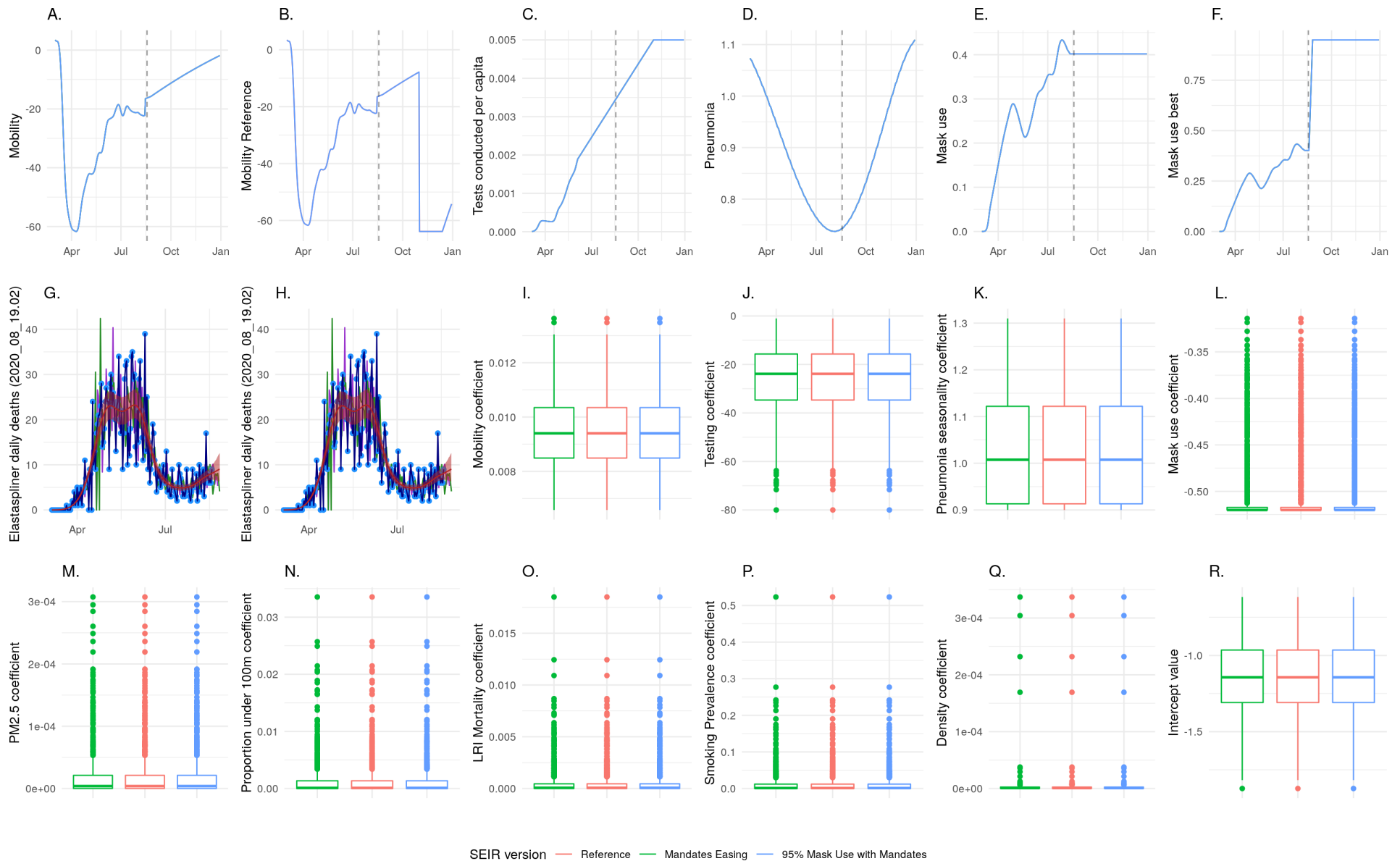
Michigan: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

49 Minnesota: SEIR fit comparison



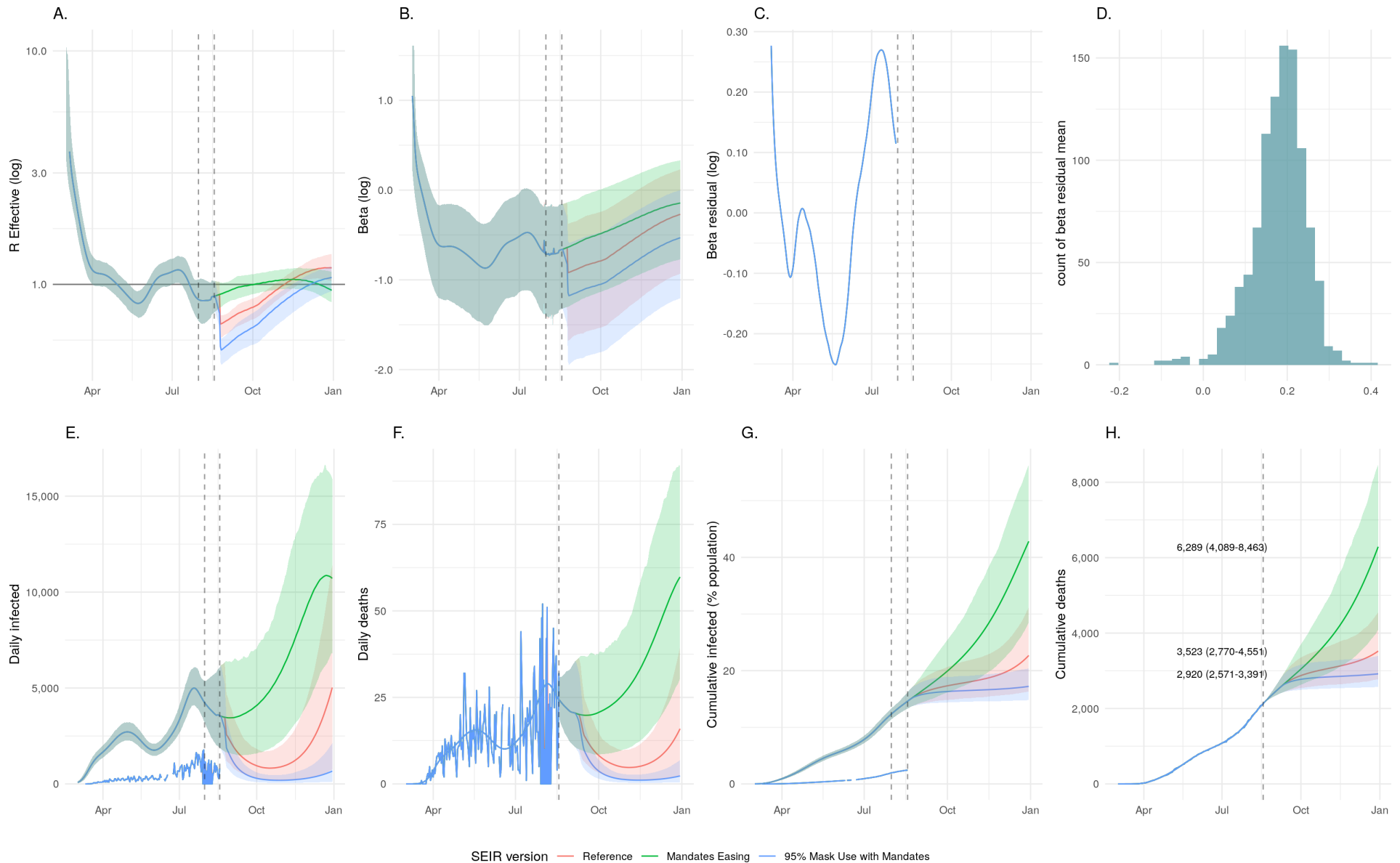
Minnesota: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

50 Minnesota: Covariate fits and regression coefficients



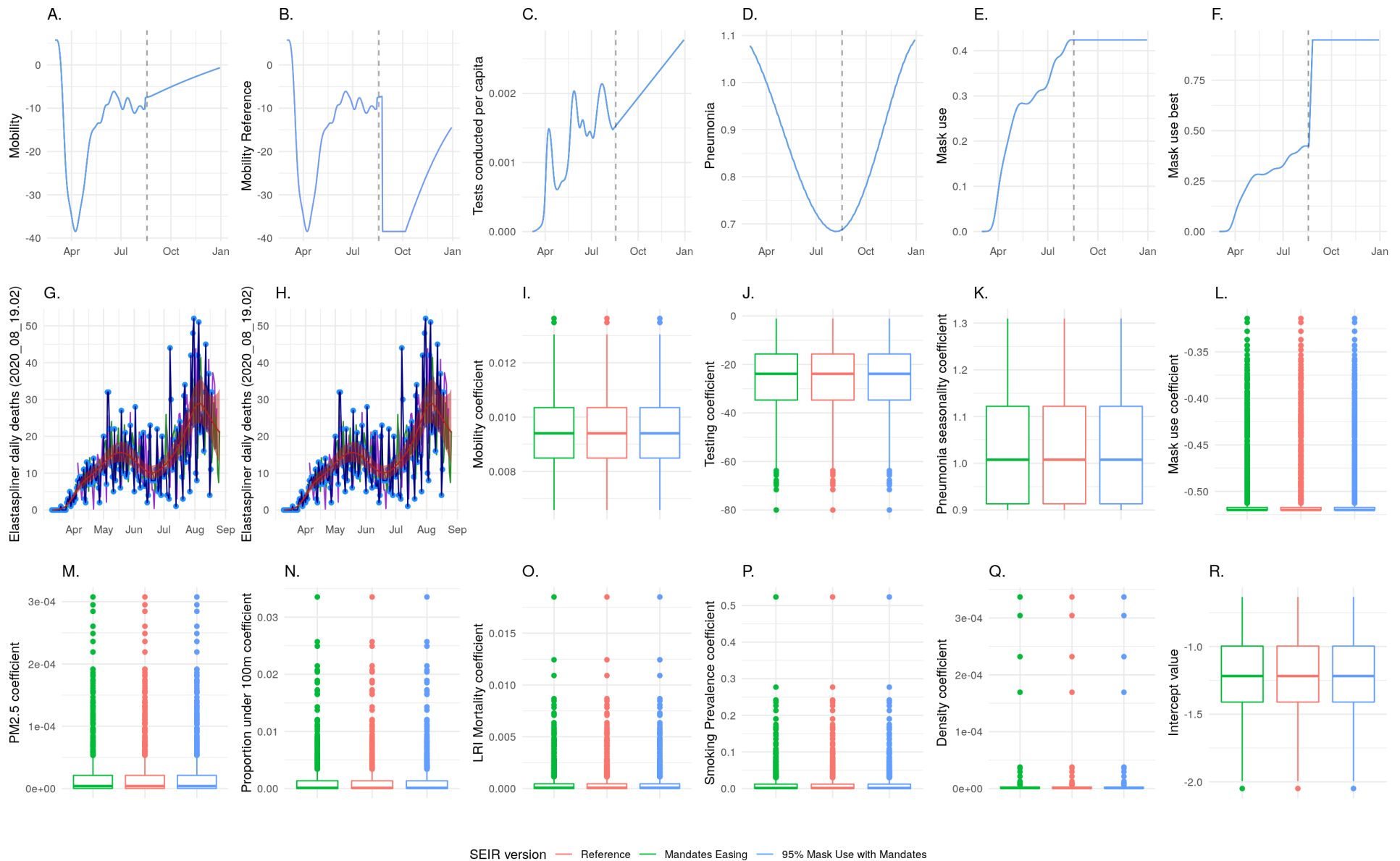
Minnesota: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

51 Mississippi: SEIR fit comparison



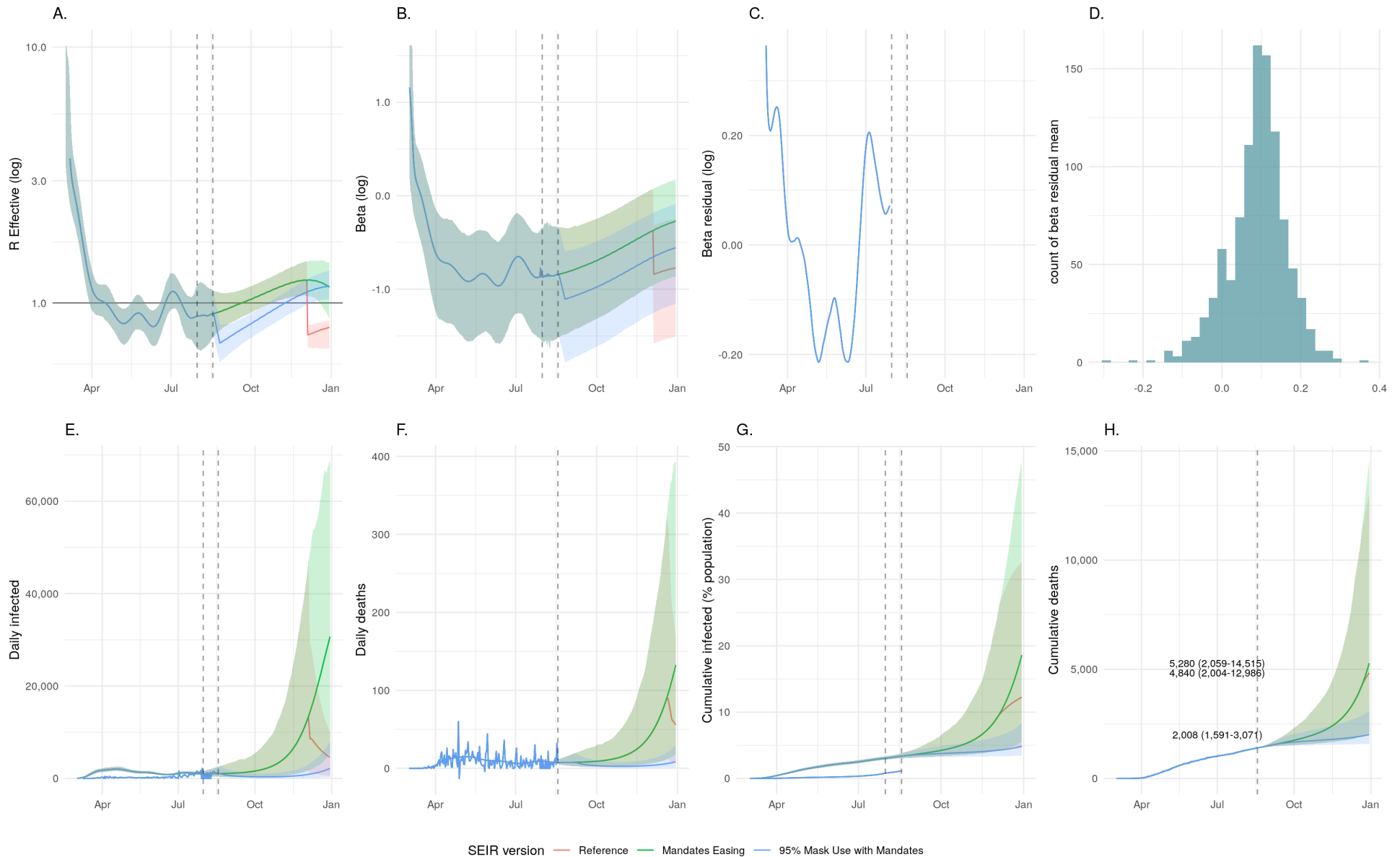
Mississippi: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

52 Mississippi: Covariate fits and regression coefficients



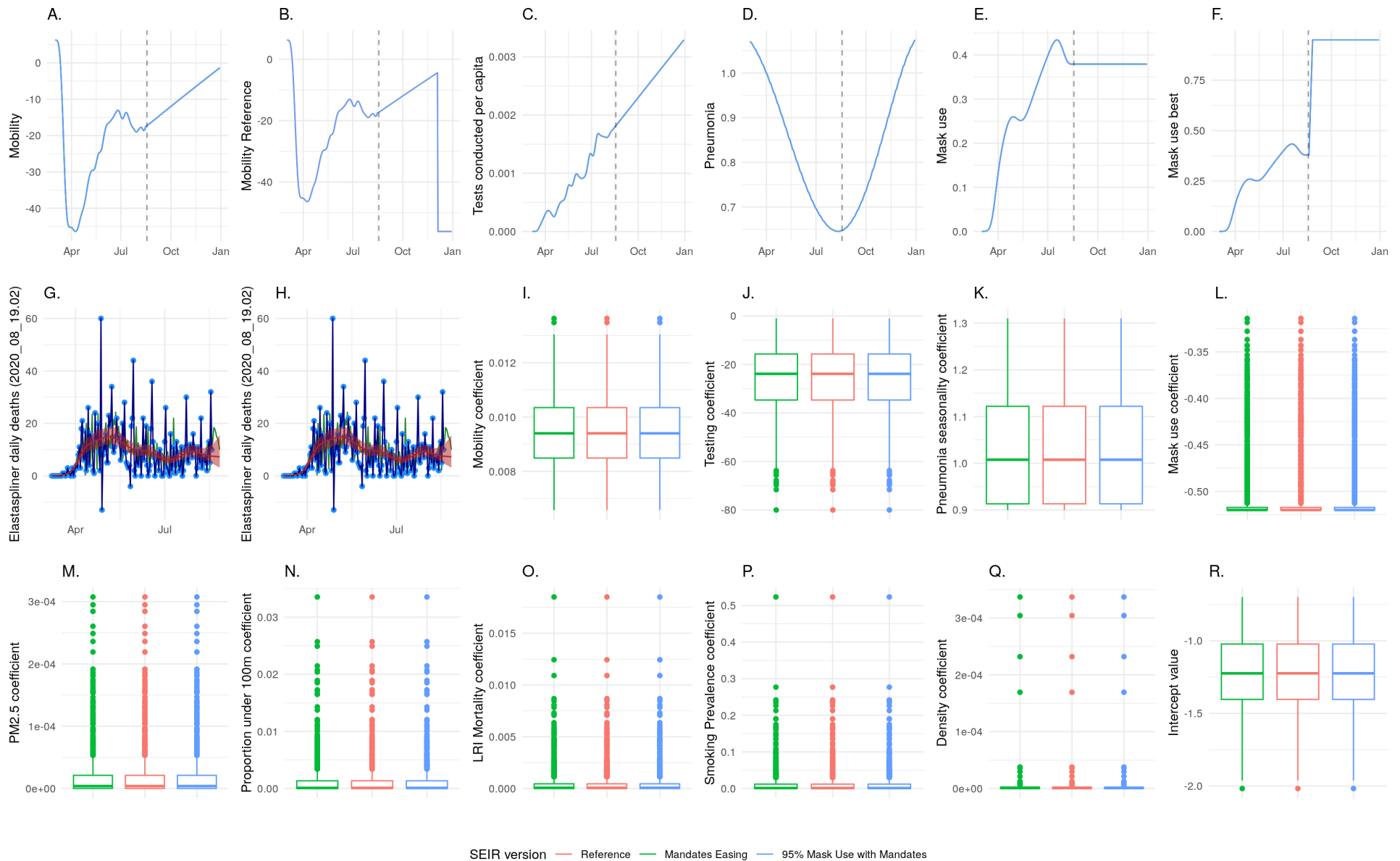
Mississippi: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

53 Missouri: SEIR fit comparison



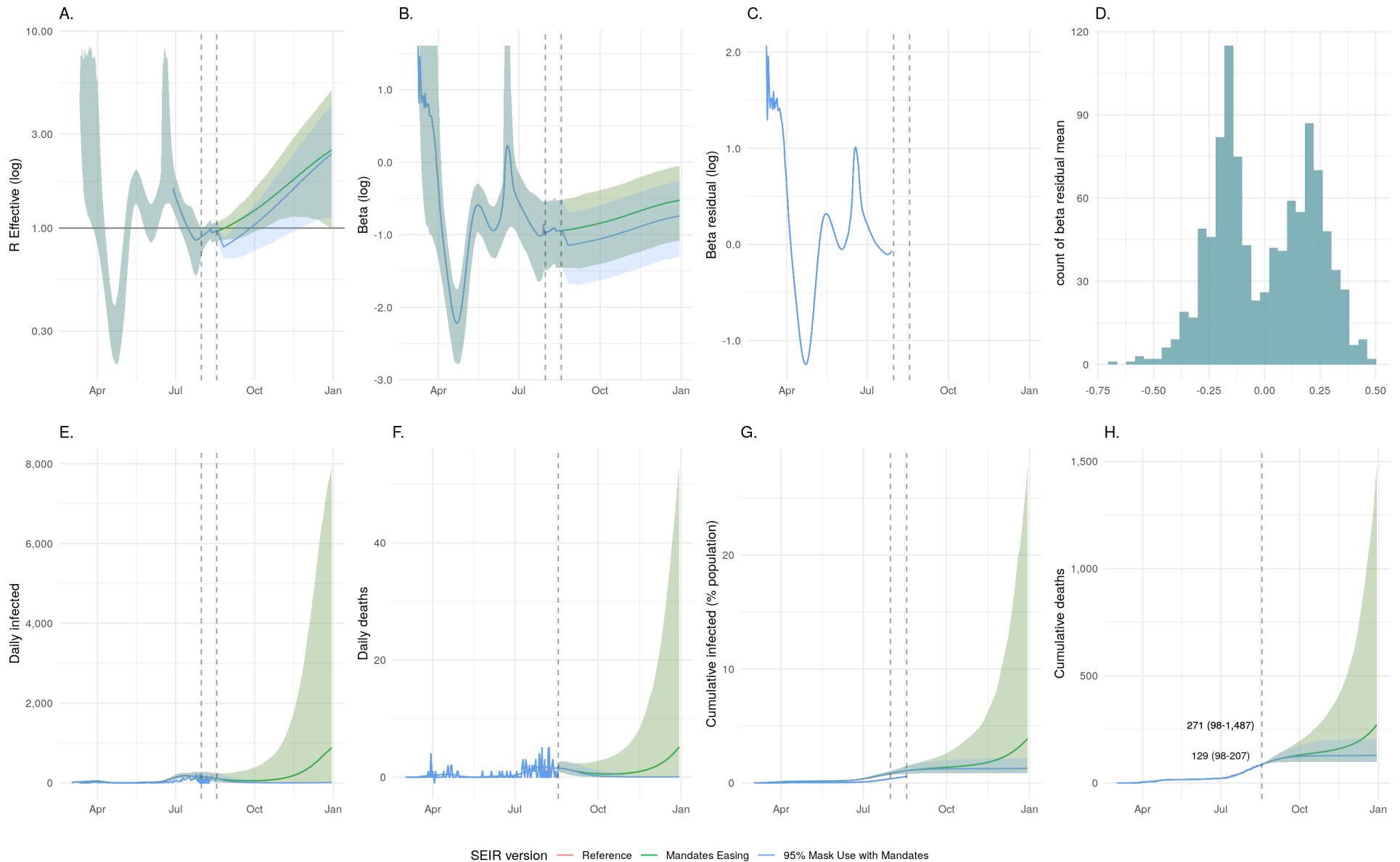
Missouri: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

54 Missouri: Covariate fits and regression coefficients



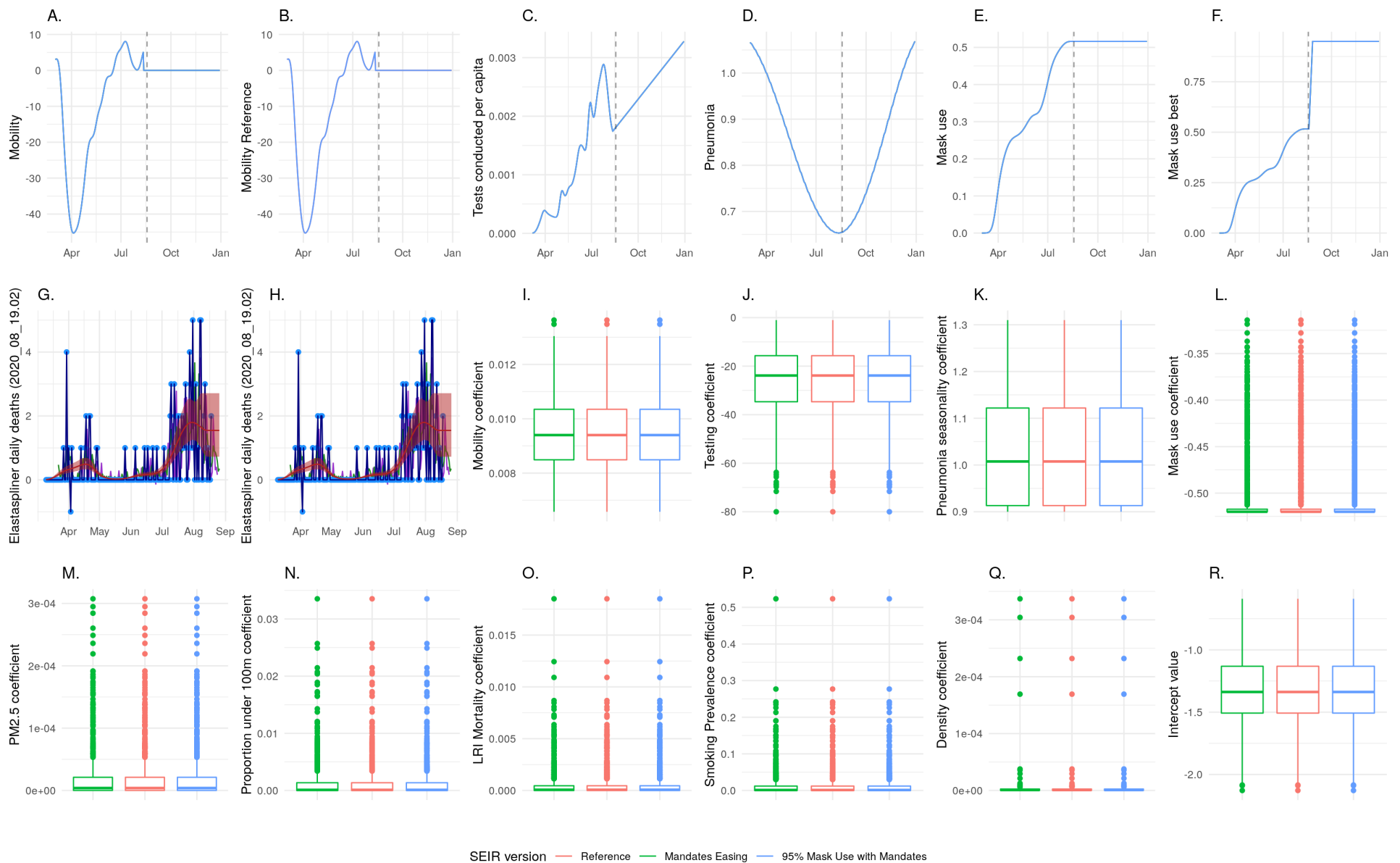
Missouri: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

55 Montana: SEIR fit comparison



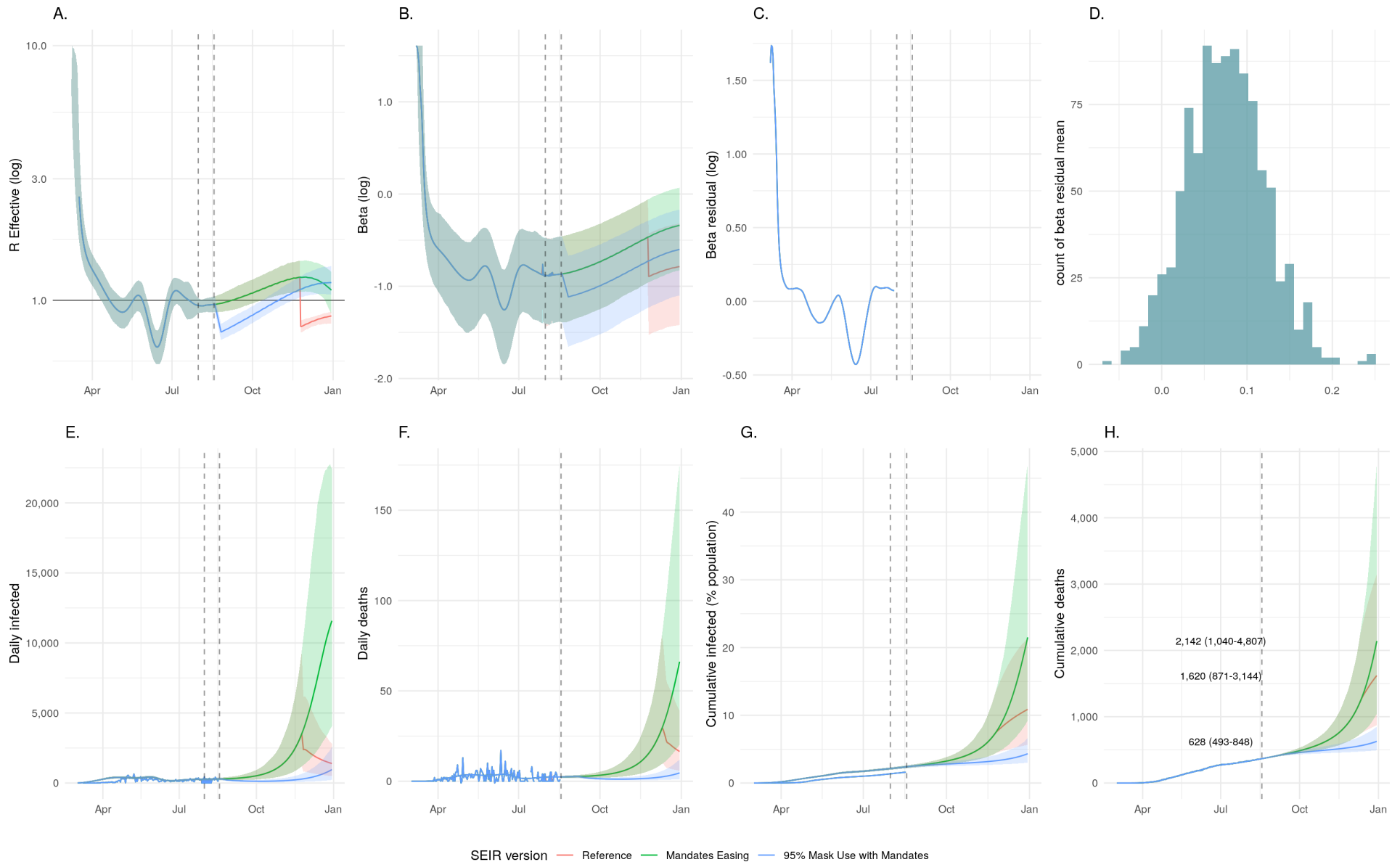
Montana: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

56 Montana: Covariate fits and regression coefficients



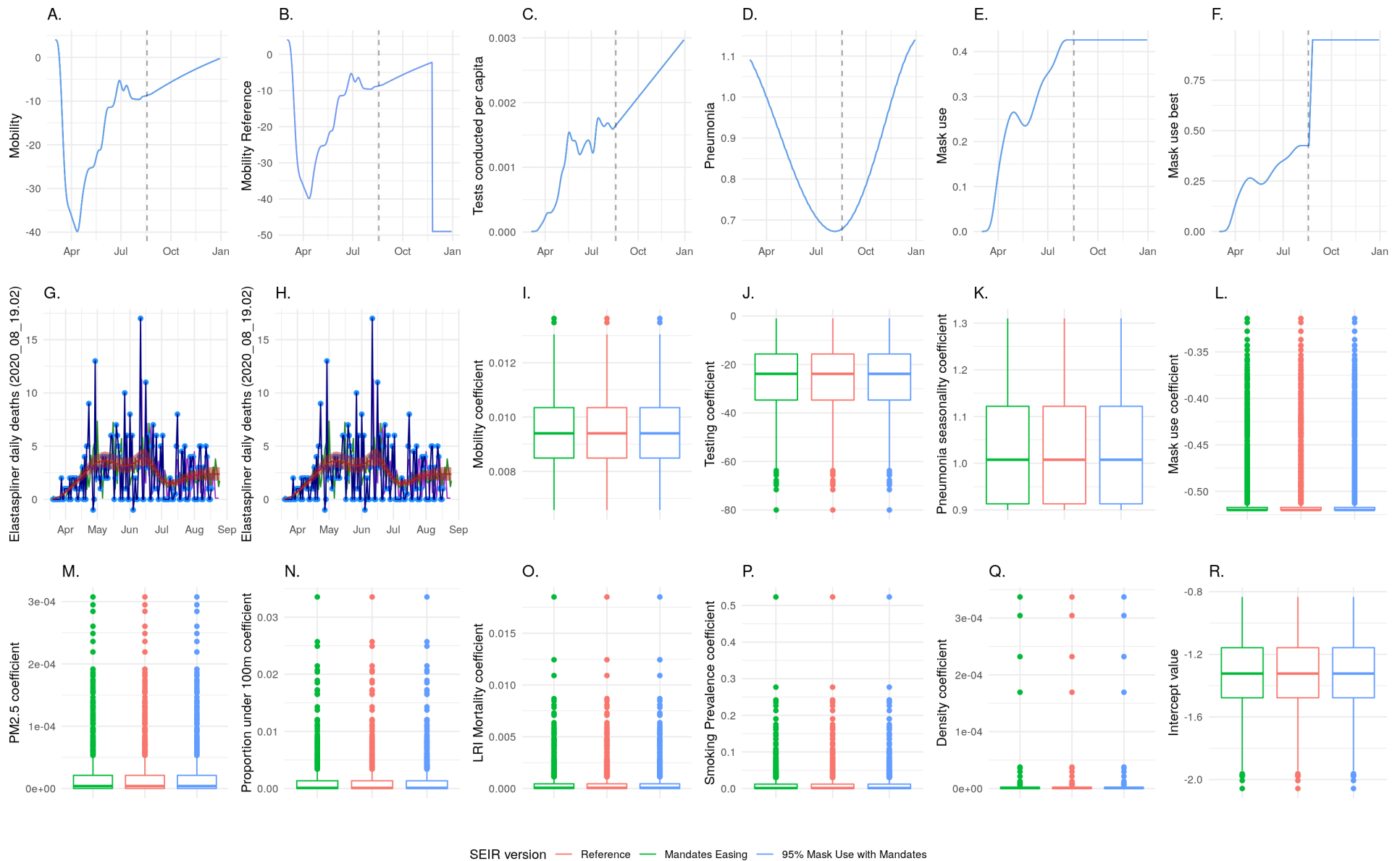
Montana: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

57 Nebraska: SEIR fit comparison



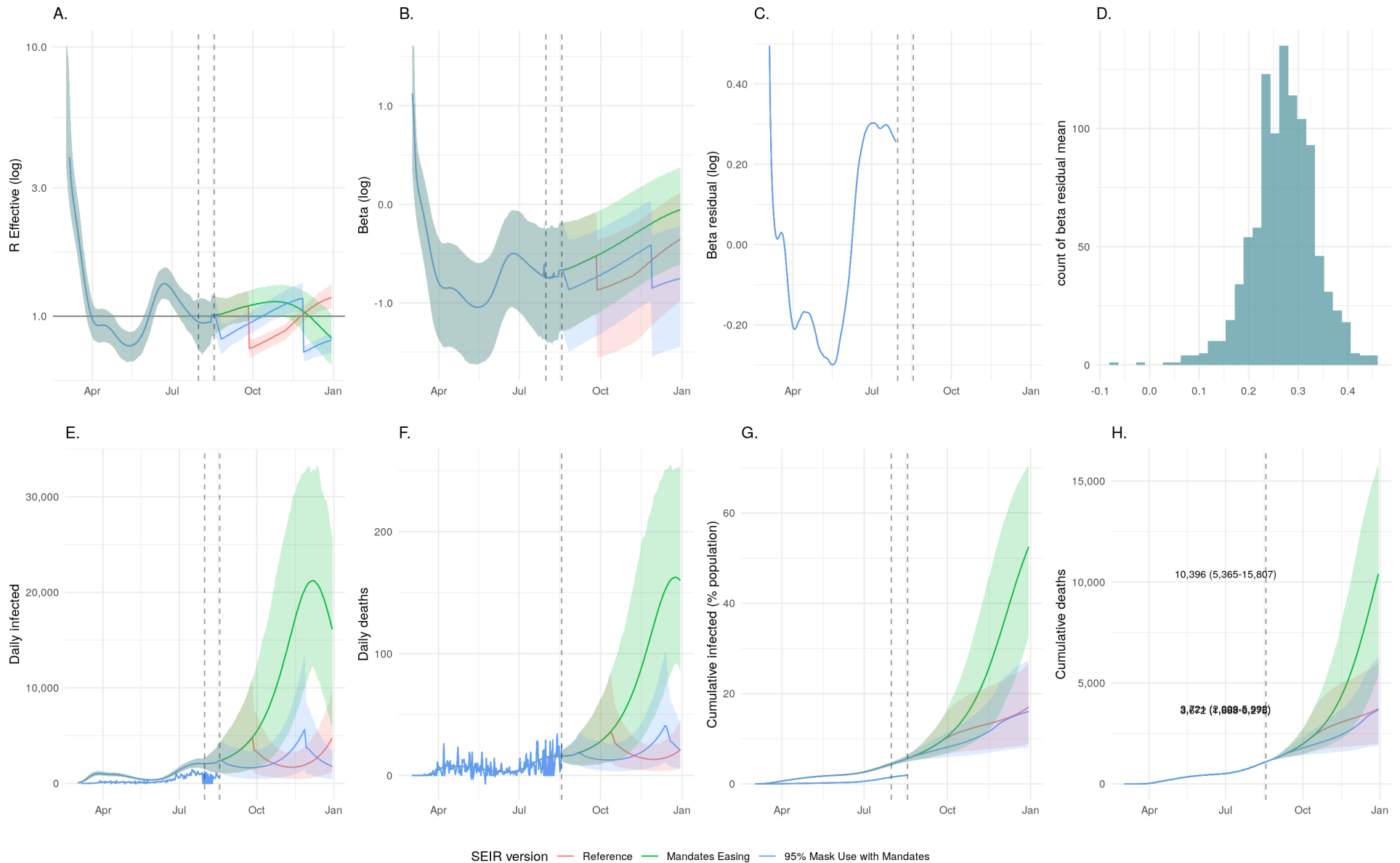
Nebraska: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

58 Nebraska: Covariate fits and regression coefficients



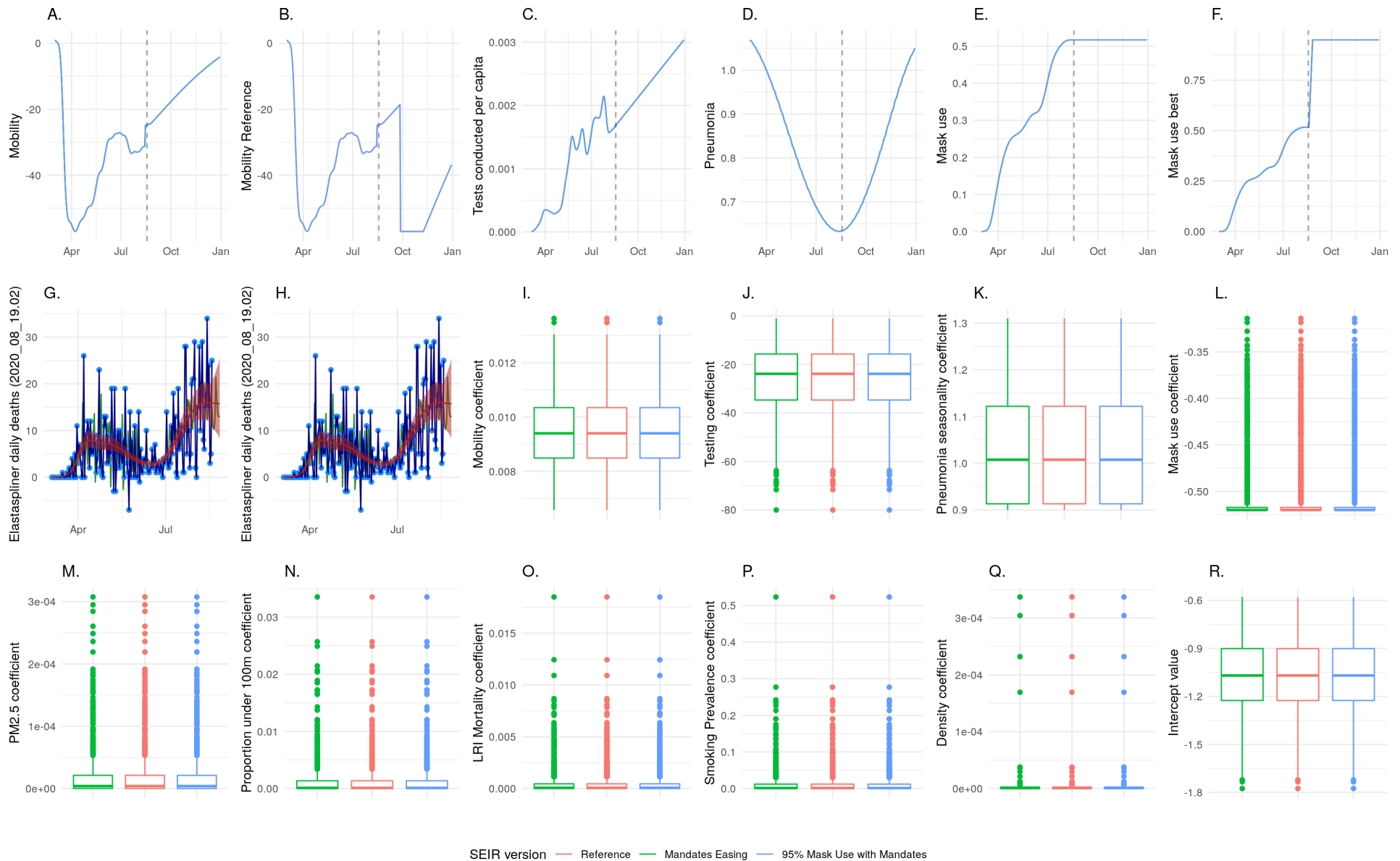
Nebraska: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

59 Nevada: SEIR fit comparison



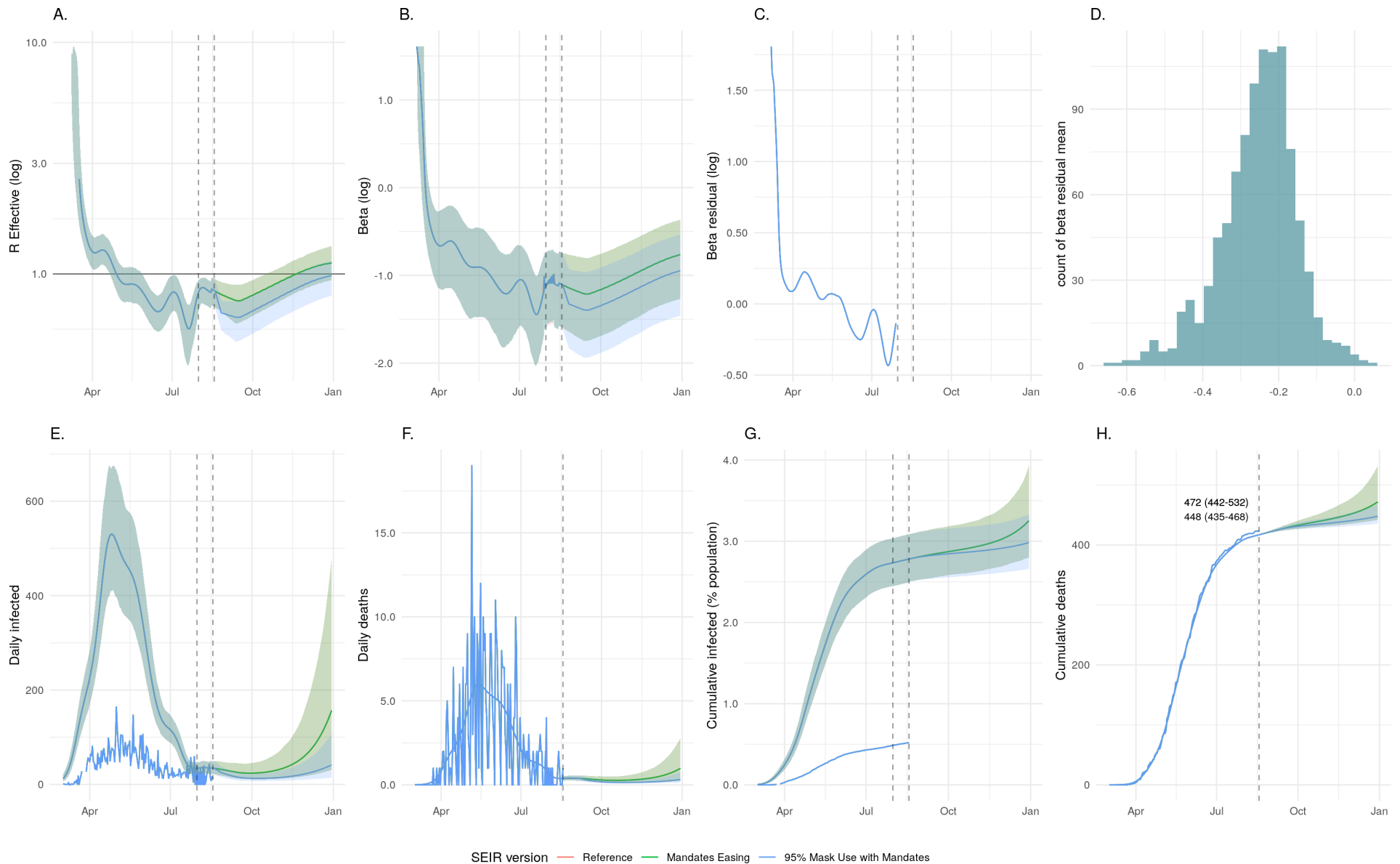
Nevada: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR *beta* parameter. **C:** residual of predicted *beta* and the observed value calculated directly from infection data over time. **D:** histogram of residual values for *beta*. Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

60 Nevada: Covariate fits and regression coefficients



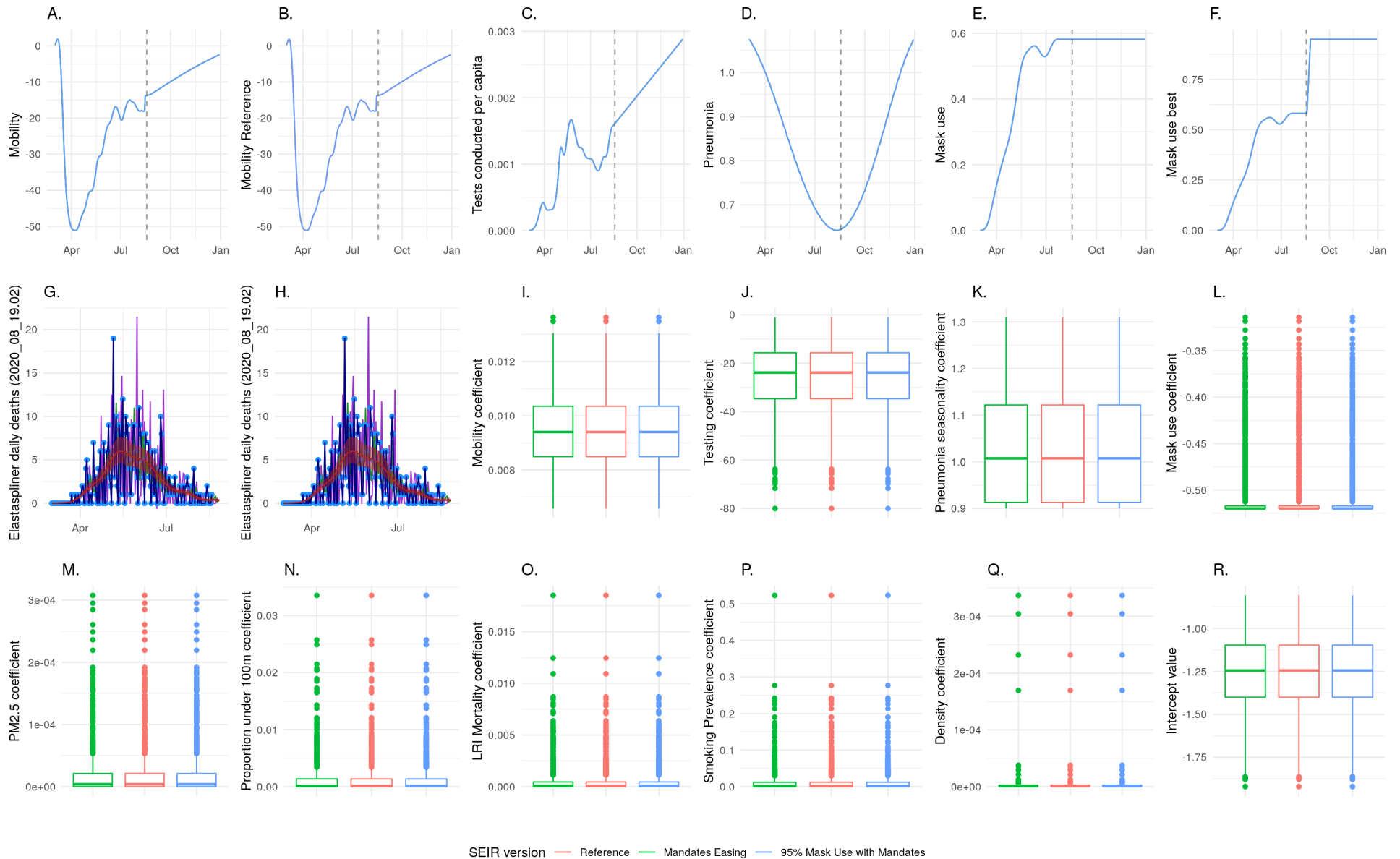
Nevada: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

61 New Hampshire: SEIR fit comparison



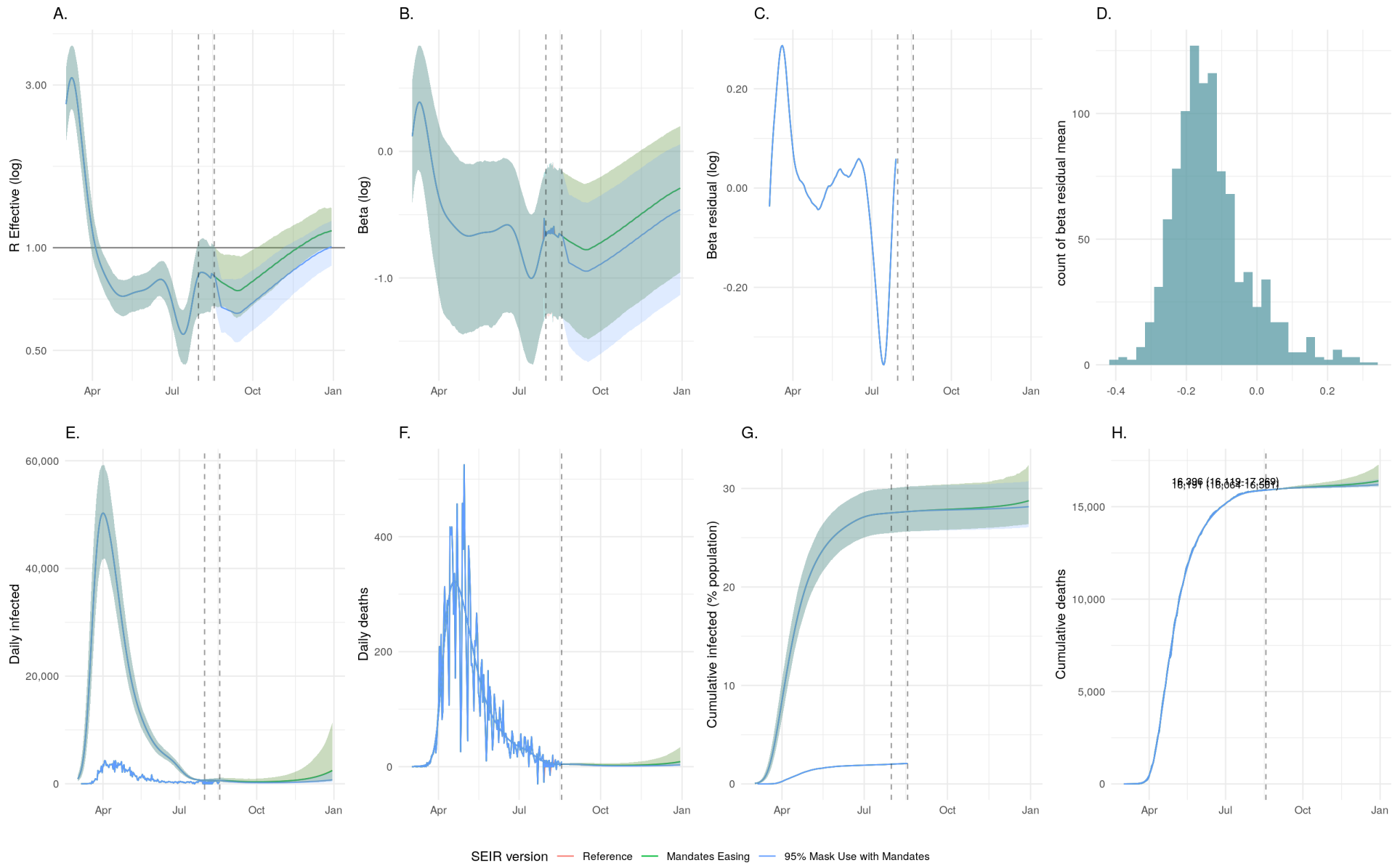
New Hampshire: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

62 New Hampshire: Covariate fits and regression coefficients



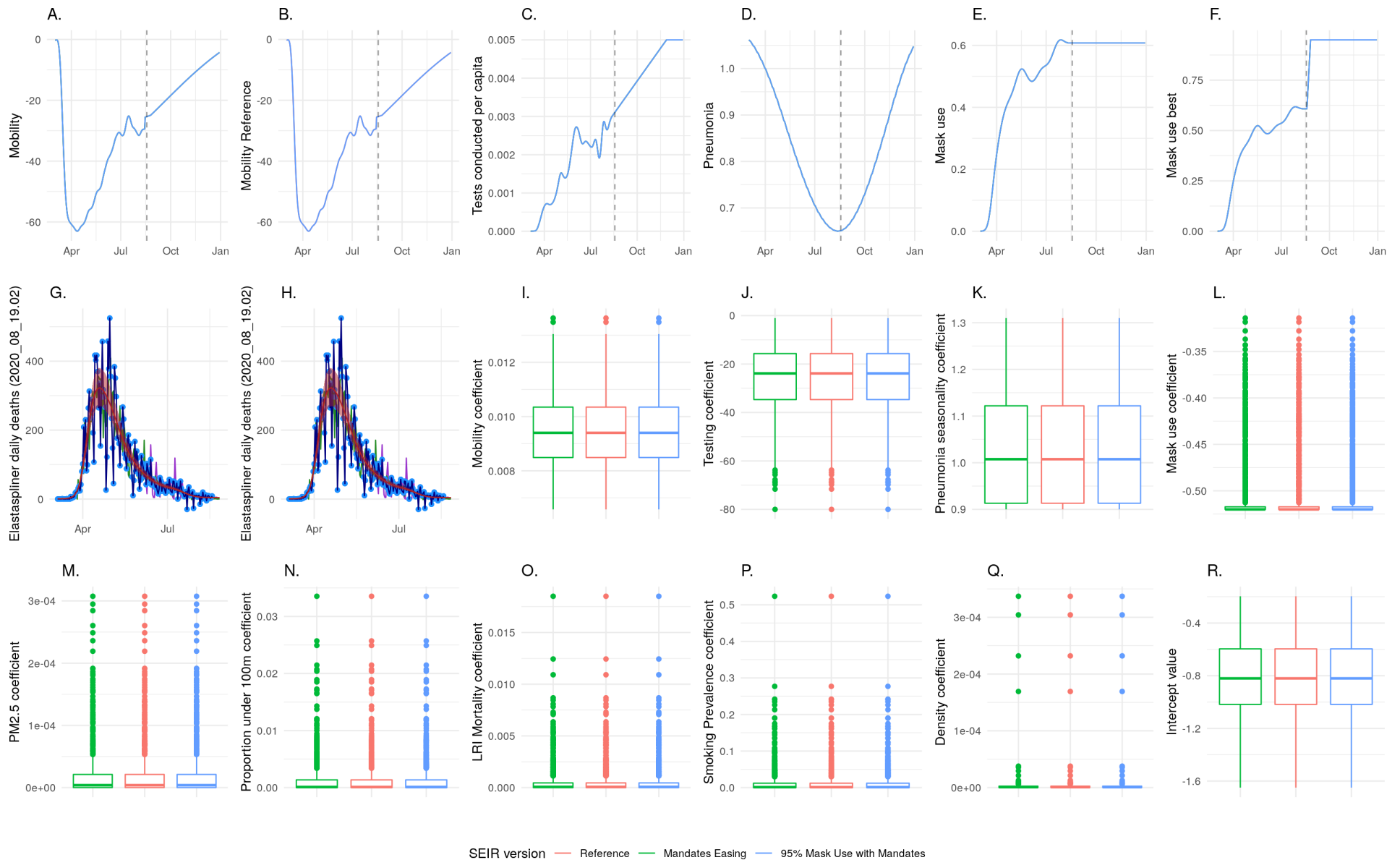
New Hampshire: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

63 New Jersey: SEIR fit comparison



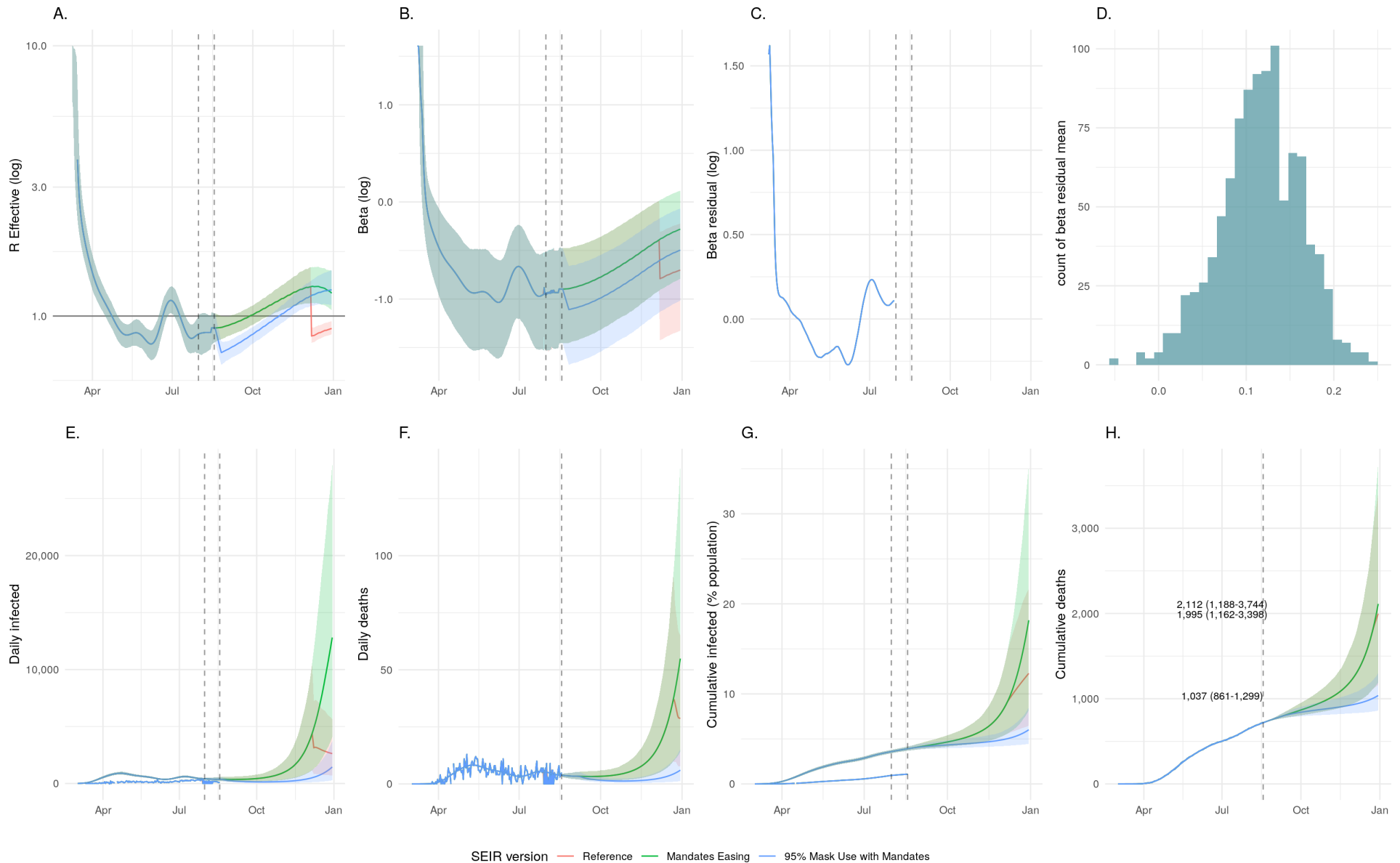
New Jersey: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR *beta* parameter. **C:** residual of predicted *beta* and the observed value calculated directly from infection data over time. **D:** histogram of residual values for *beta*. Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

64 New Jersey: Covariate fits and regression coefficients



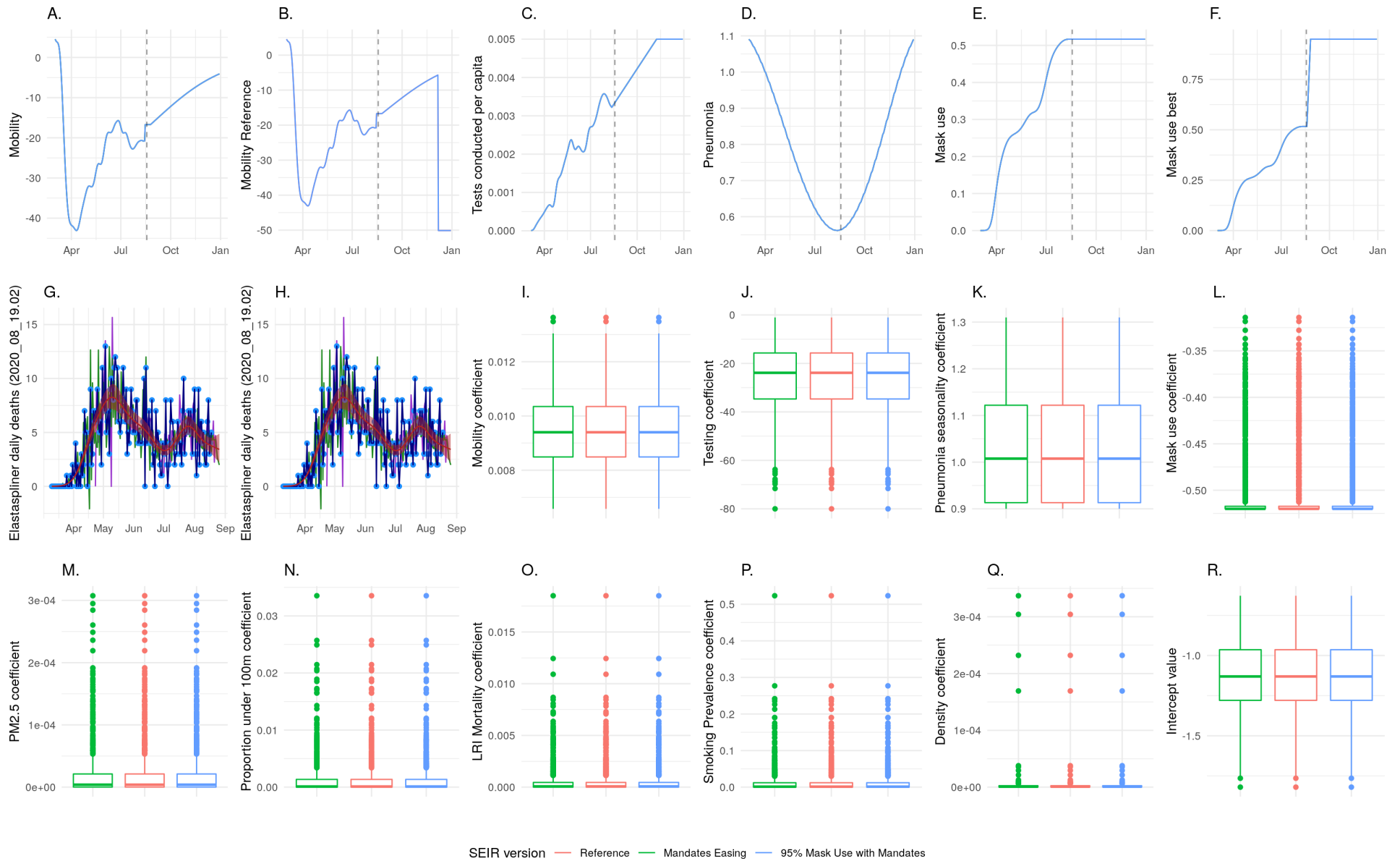
New Jersey: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

65 New Mexico: SEIR fit comparison



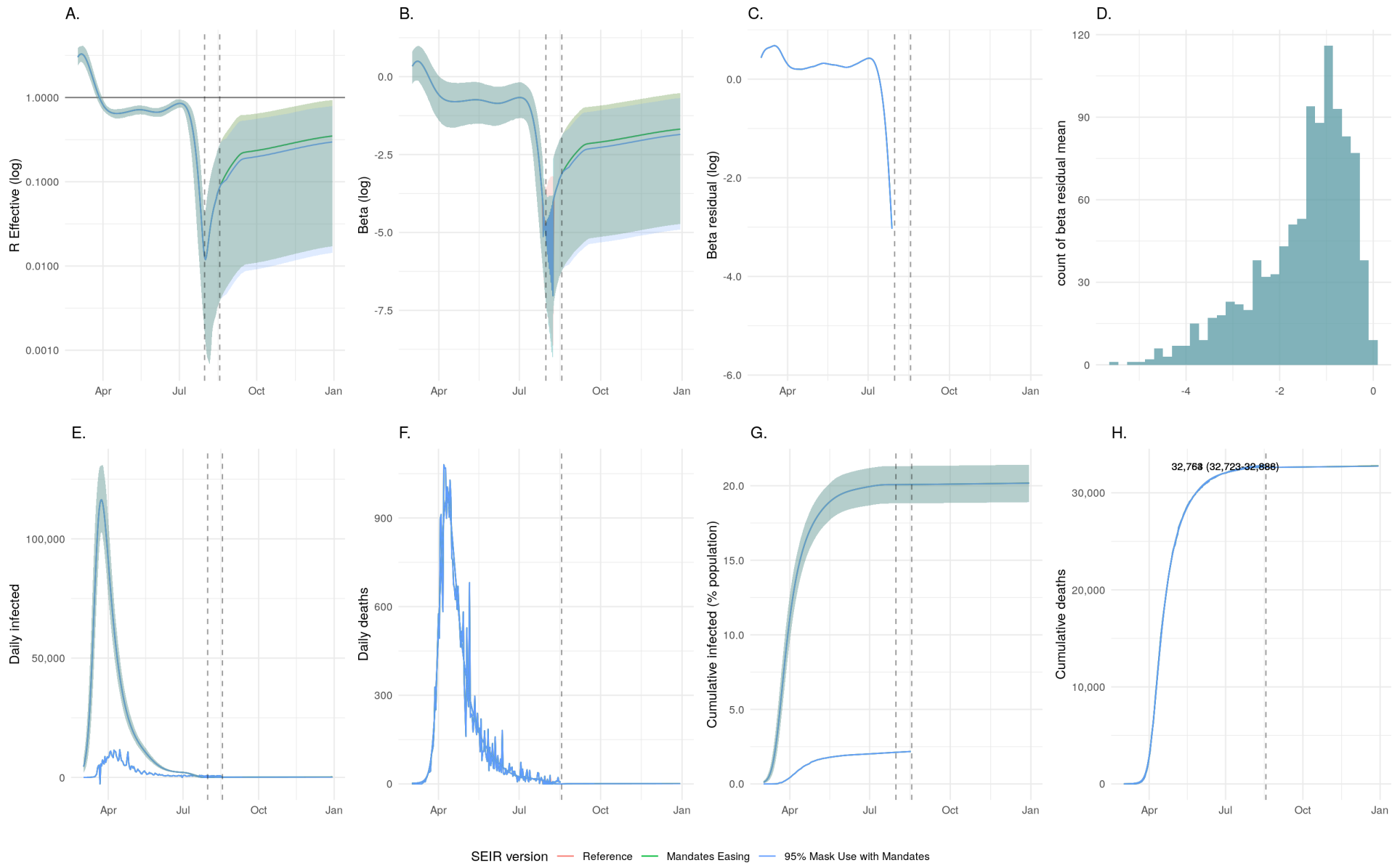
New Mexico: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

66 New Mexico: Covariate fits and regression coefficients



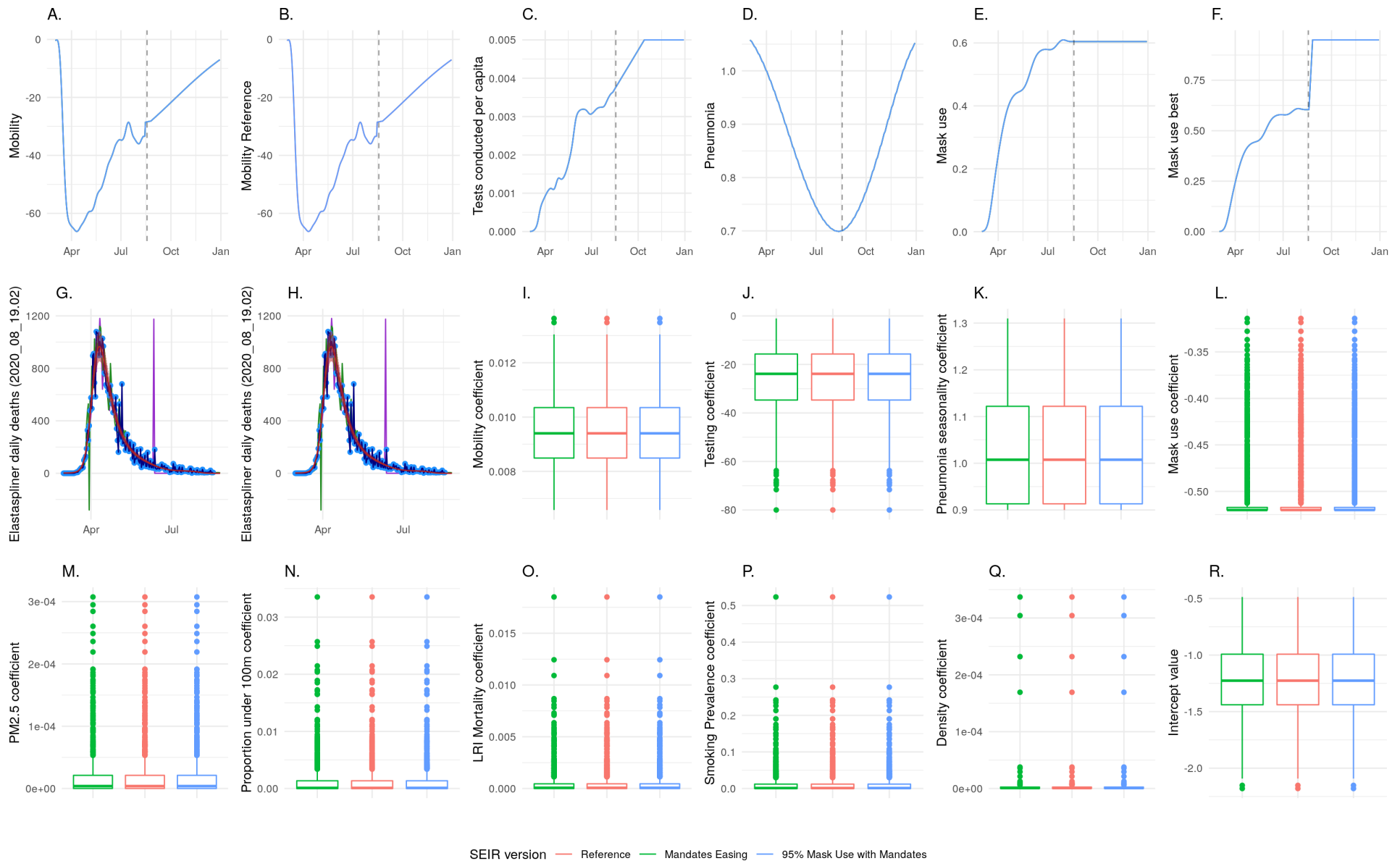
New Mexico: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

67 New York: SEIR fit comparison



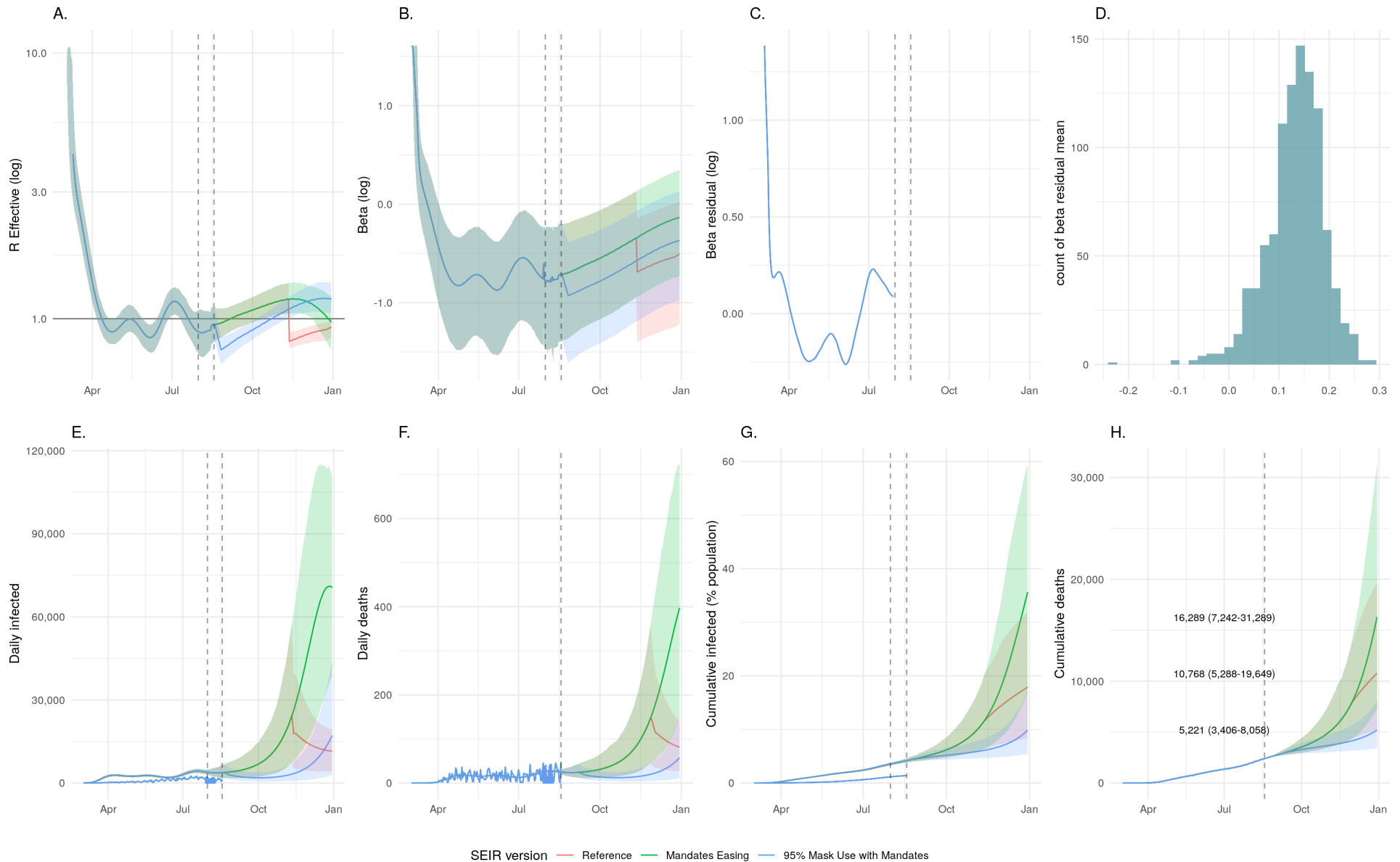
New York: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR *beta* parameter. **C:** residual of predicted *beta* and the observed value calculated directly from infection data over time. **D:** histogram of residual values for *beta*. Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

68 New York: Covariate fits and regression coefficients



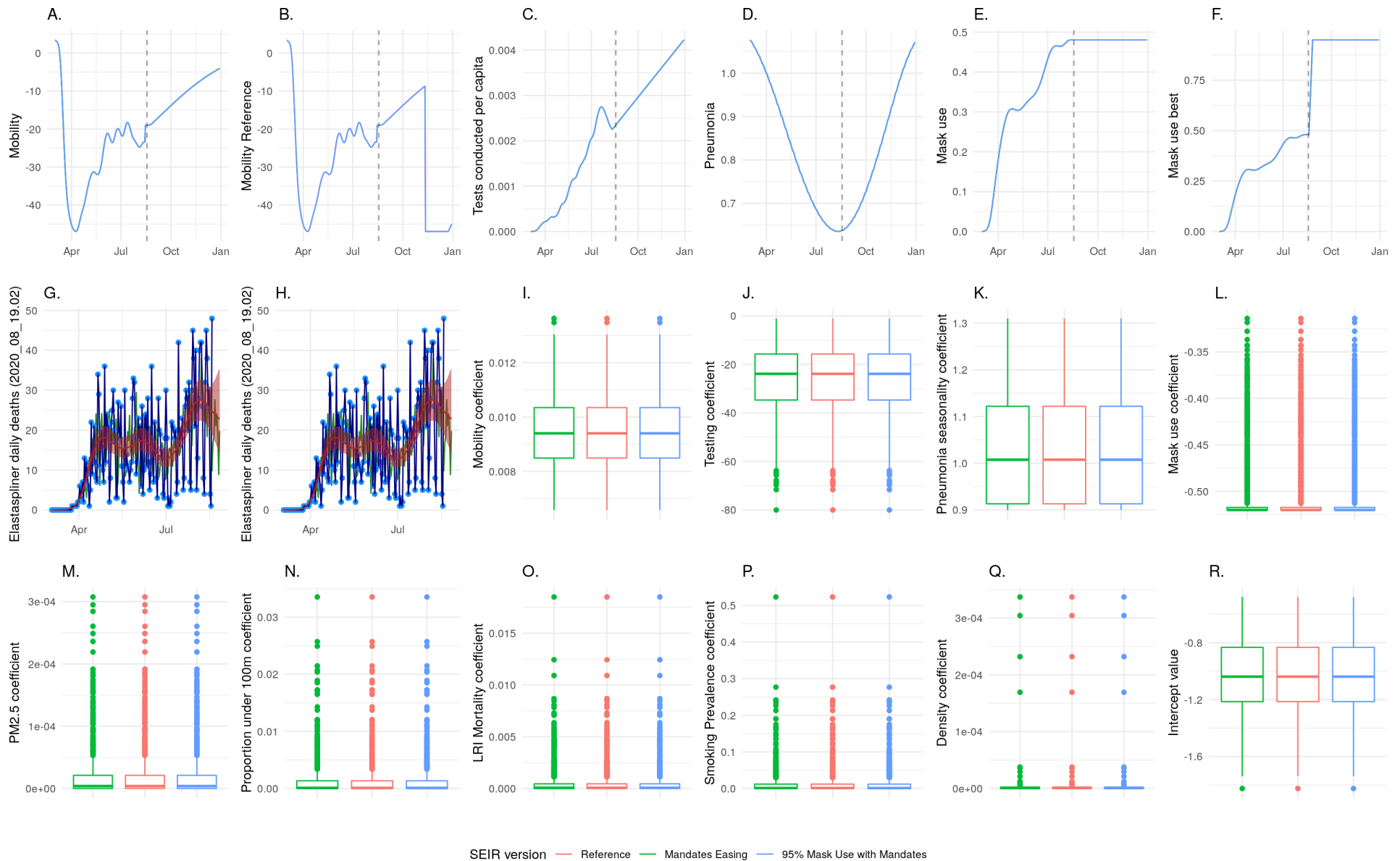
New York: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

69 North Carolina: SEIR fit comparison



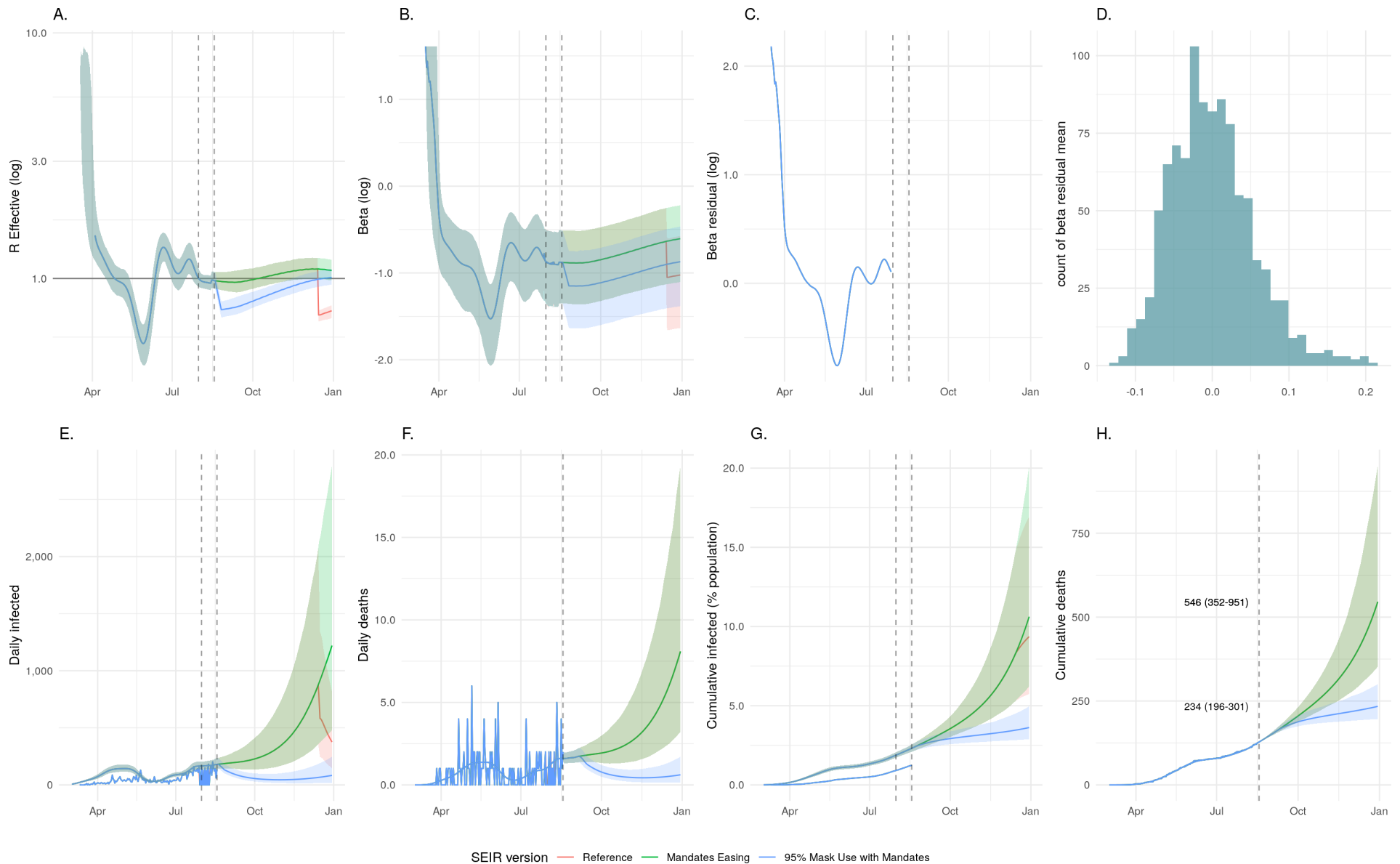
North Carolina: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

70 North Carolina: Covariate fits and regression coefficients



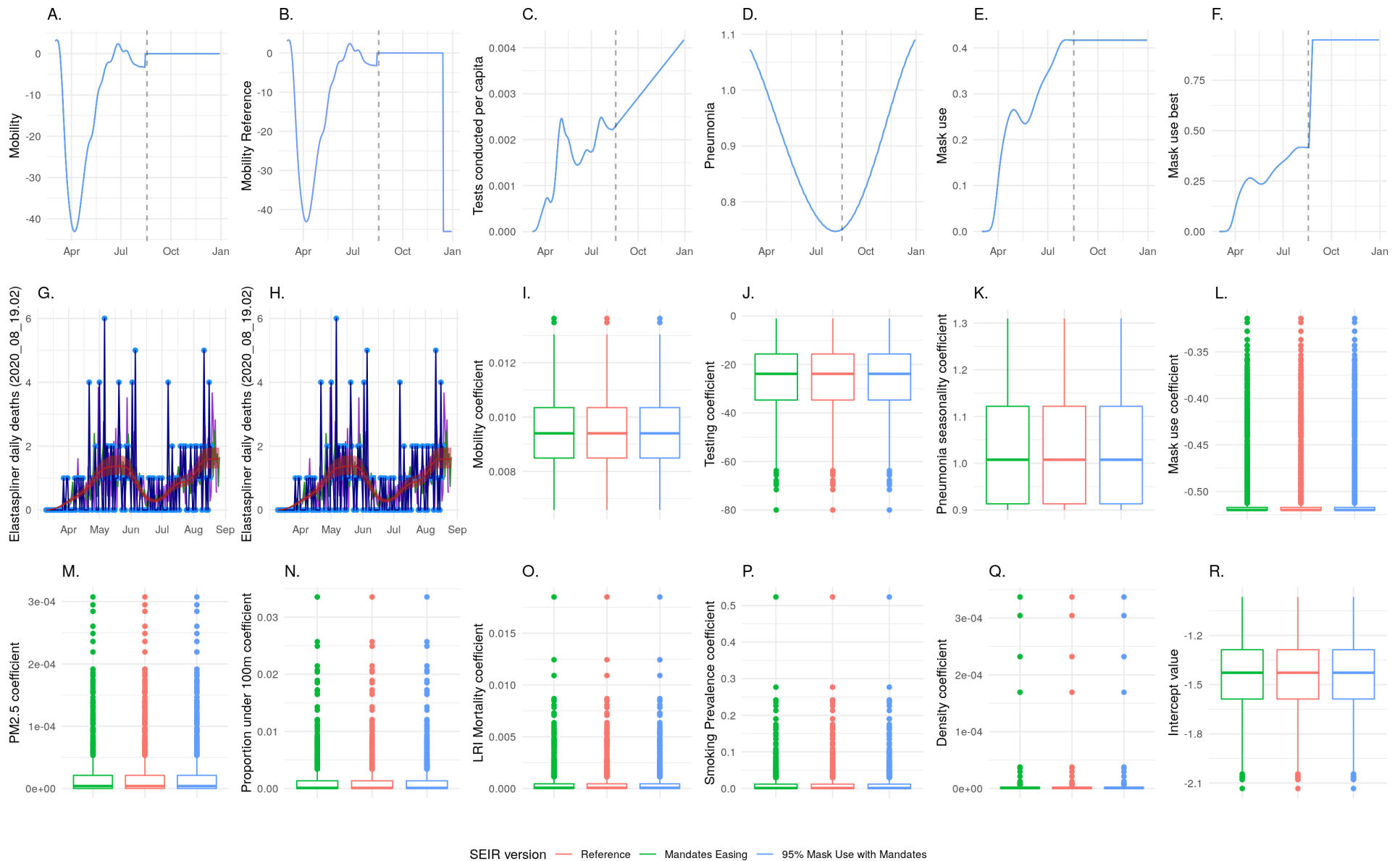
North Carolina: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

71 North Dakota: SEIR fit comparison



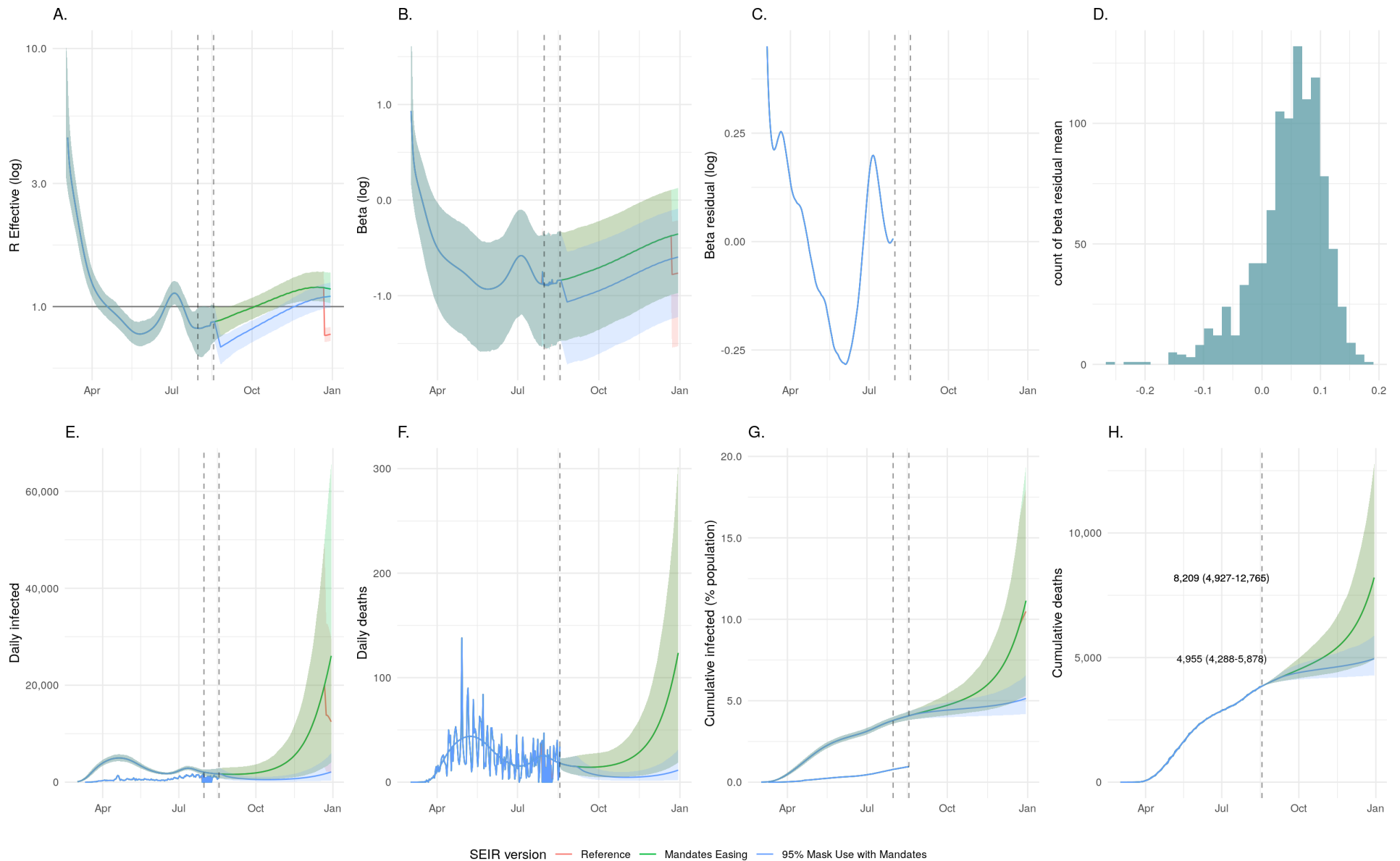
North Dakota: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

72 North Dakota: Covariate fits and regression coefficients



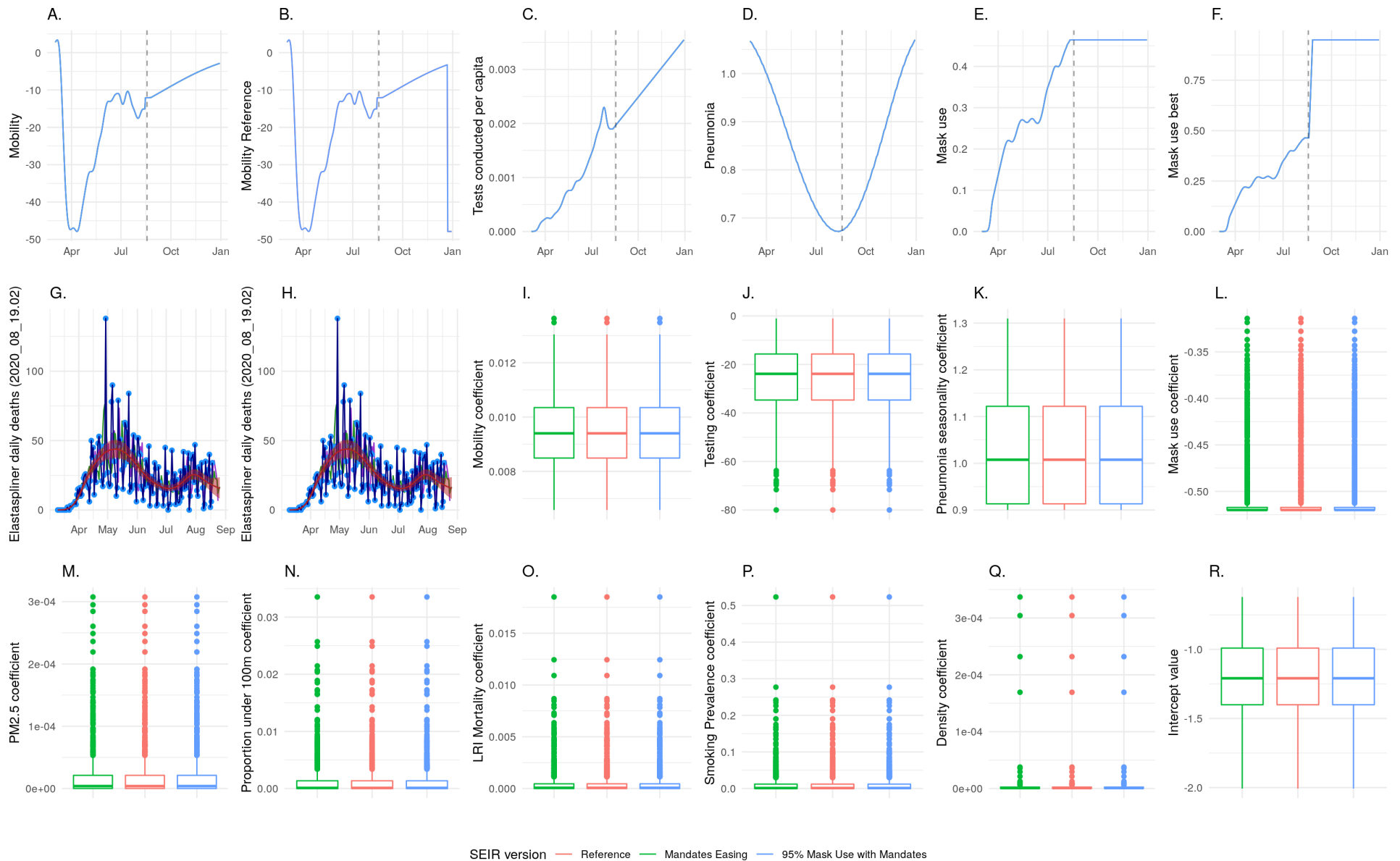
North Dakota: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

73 Ohio: SEIR fit comparison



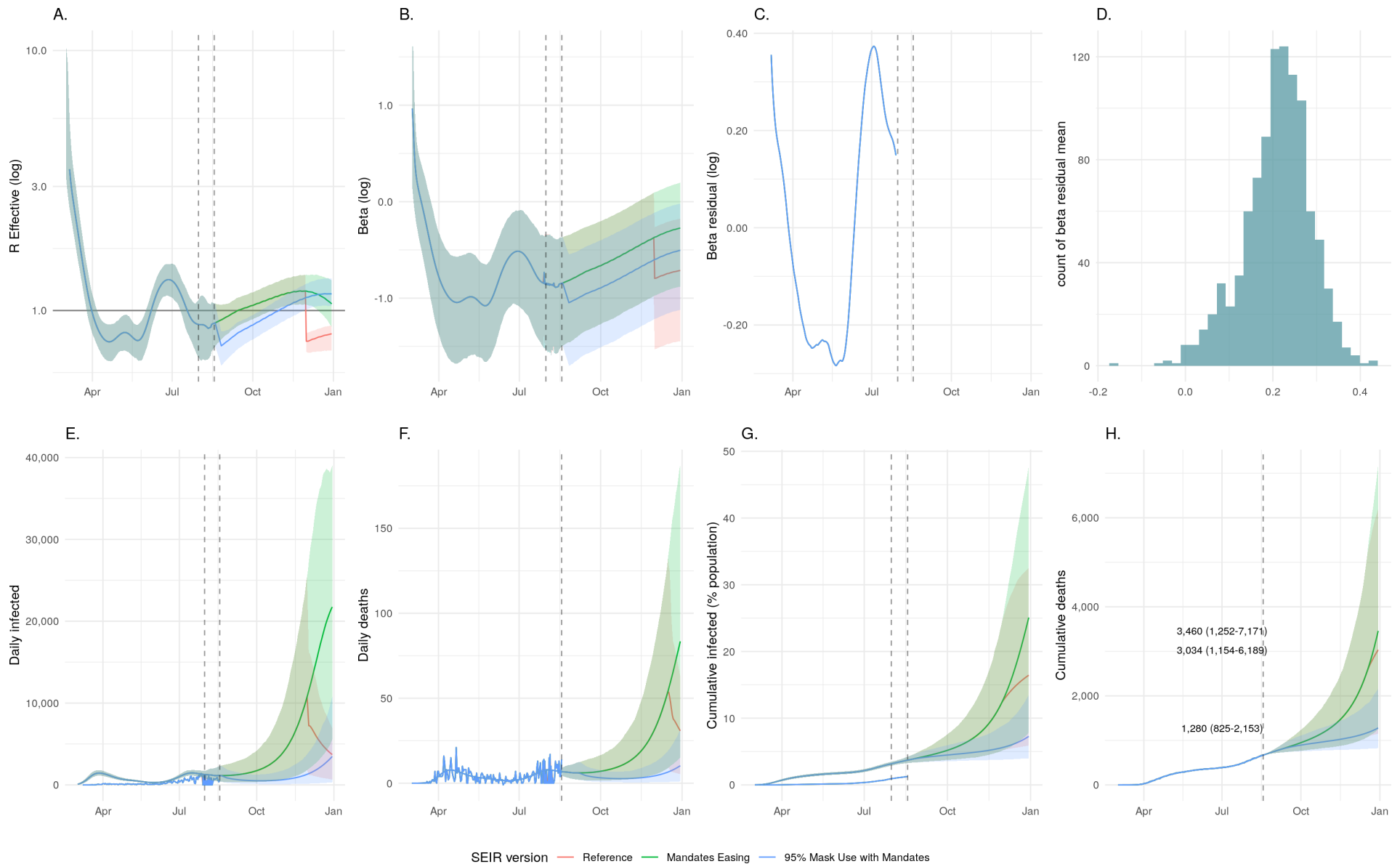
Ohio: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

74 Ohio: Covariate fits and regression coefficients



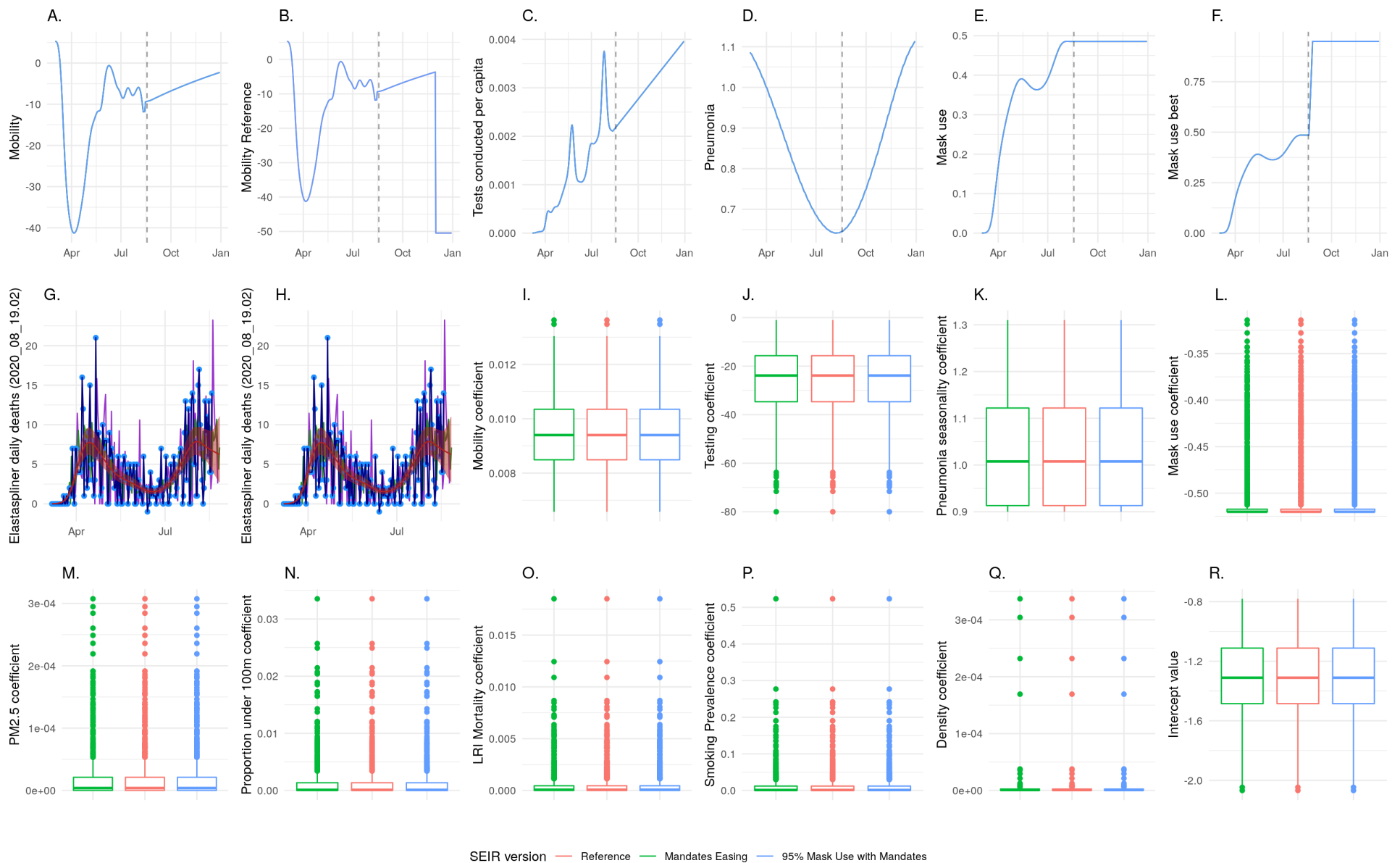
Ohio: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

75 Oklahoma: SEIR fit comparison



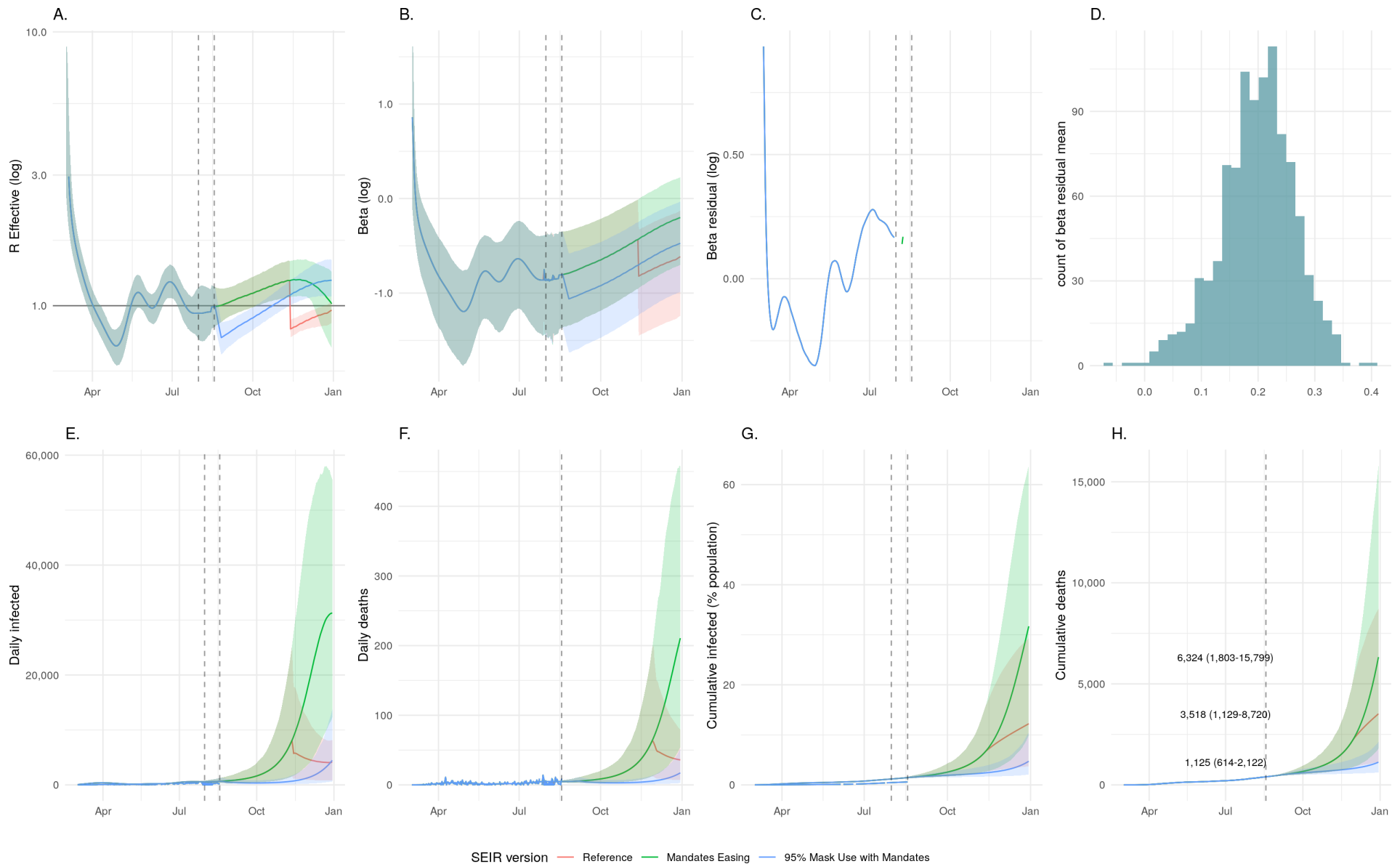
Oklahoma: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

76 Oklahoma: Covariate fits and regression coefficients



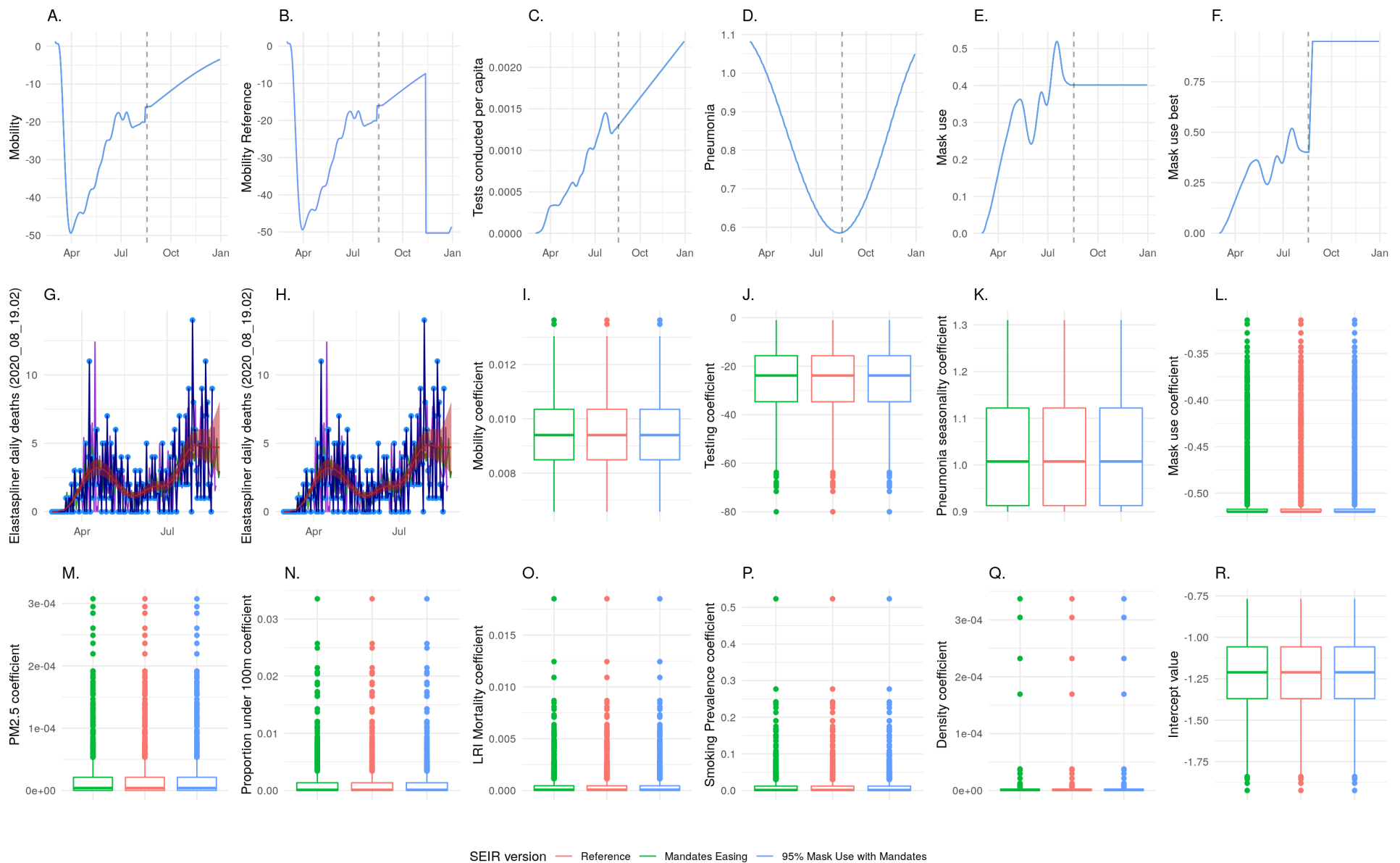
Oklahoma: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

77 Oregon: SEIR fit comparison



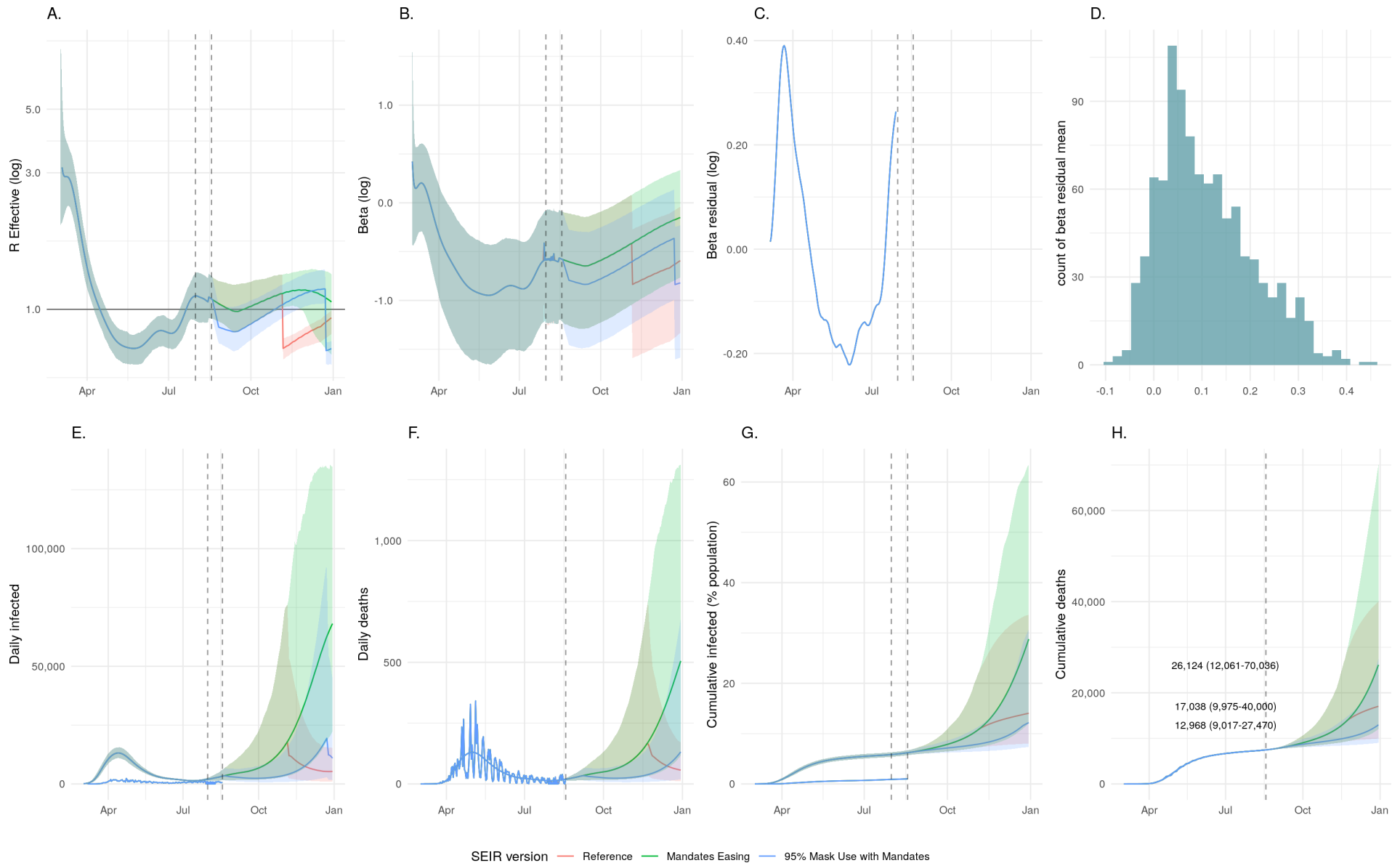
Oregon: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

78 Oregon: Covariate fits and regression coefficients



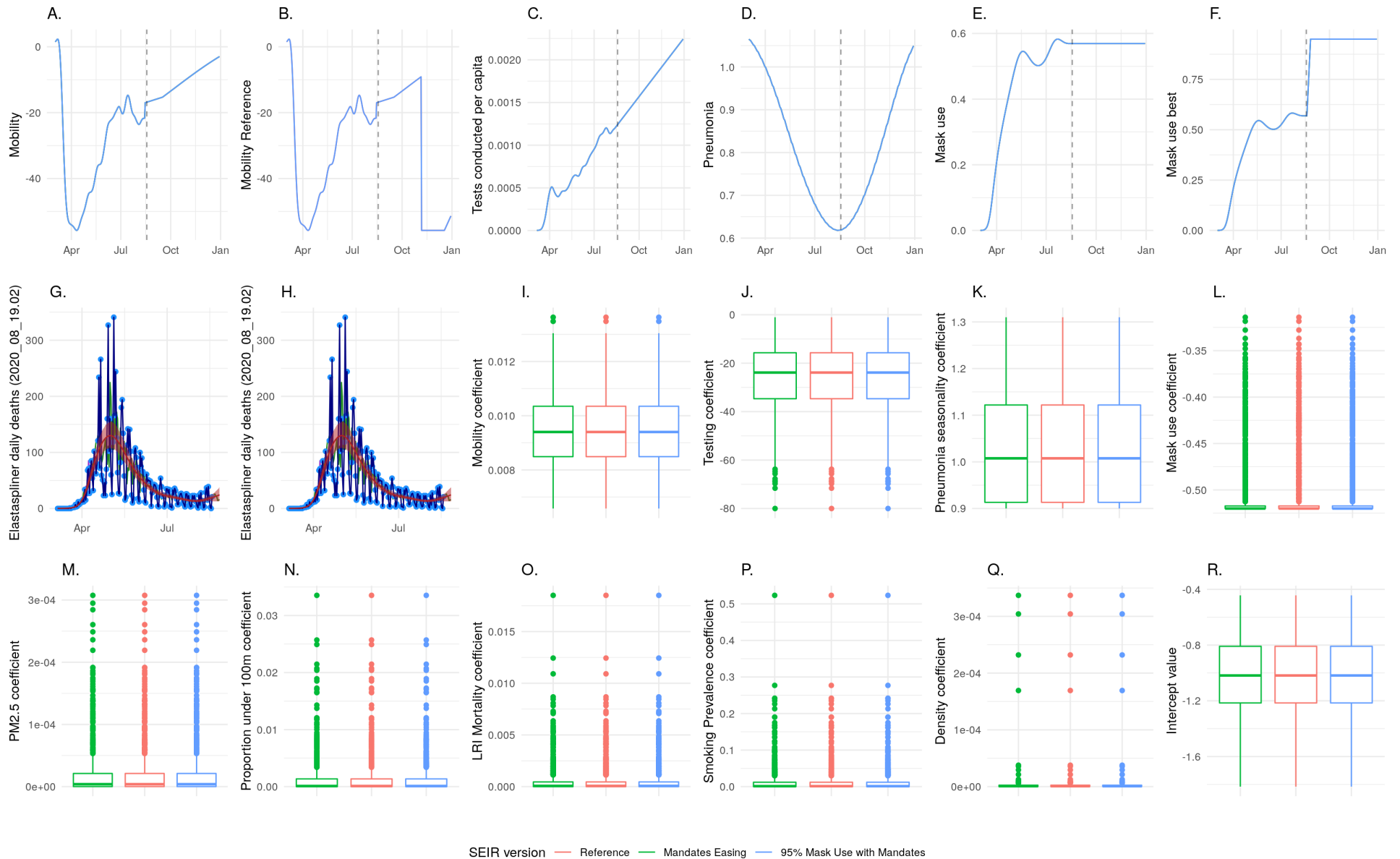
Oregon: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

79 Pennsylvania: SEIR fit comparison



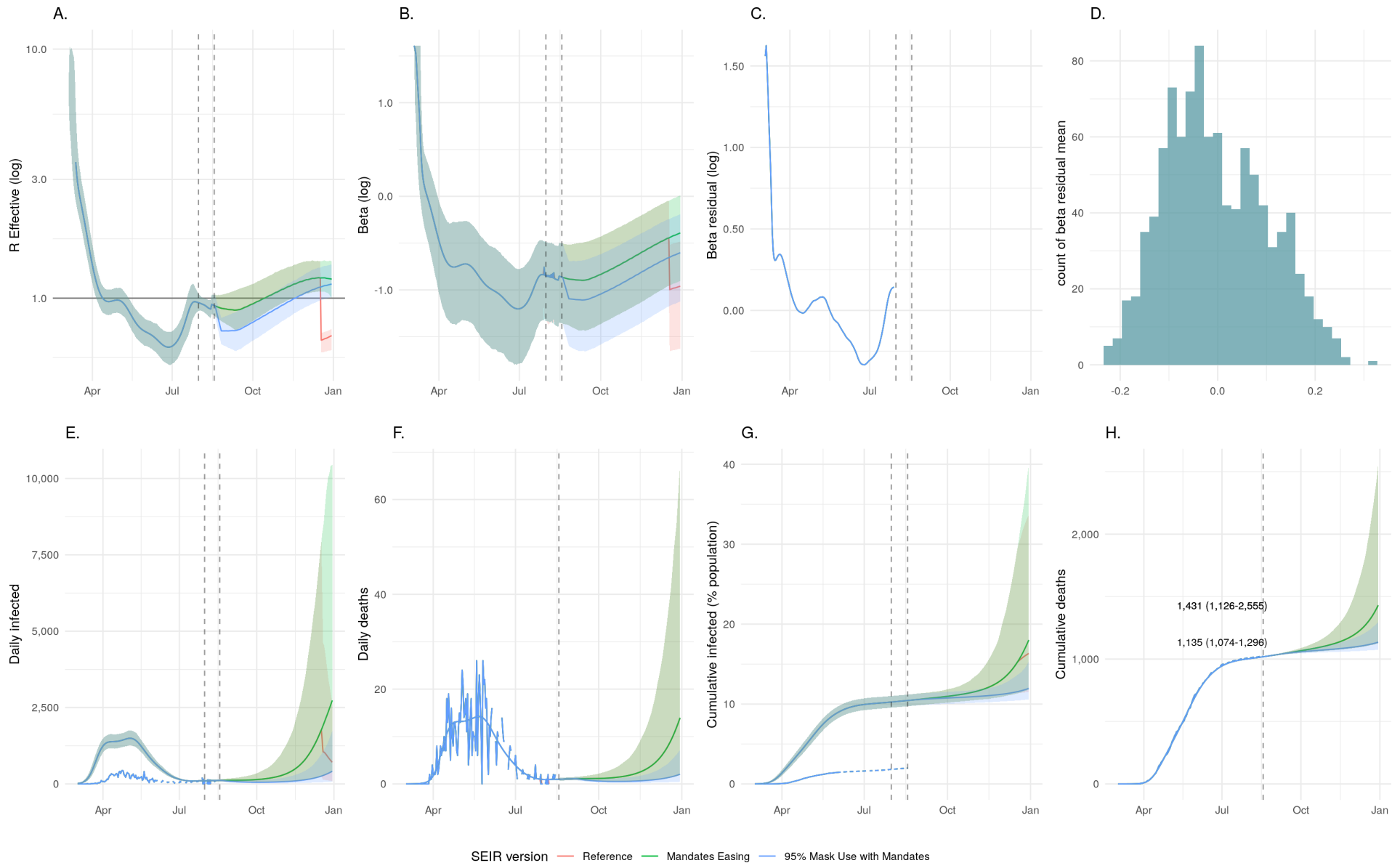
Pennsylvania: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR *beta* parameter. **C:** residual of predicted *beta* and the observed value calculated directly from infection data over time. **D:** histogram of residual values for *beta*. Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

80 Pennsylvania: Covariate fits and regression coefficients



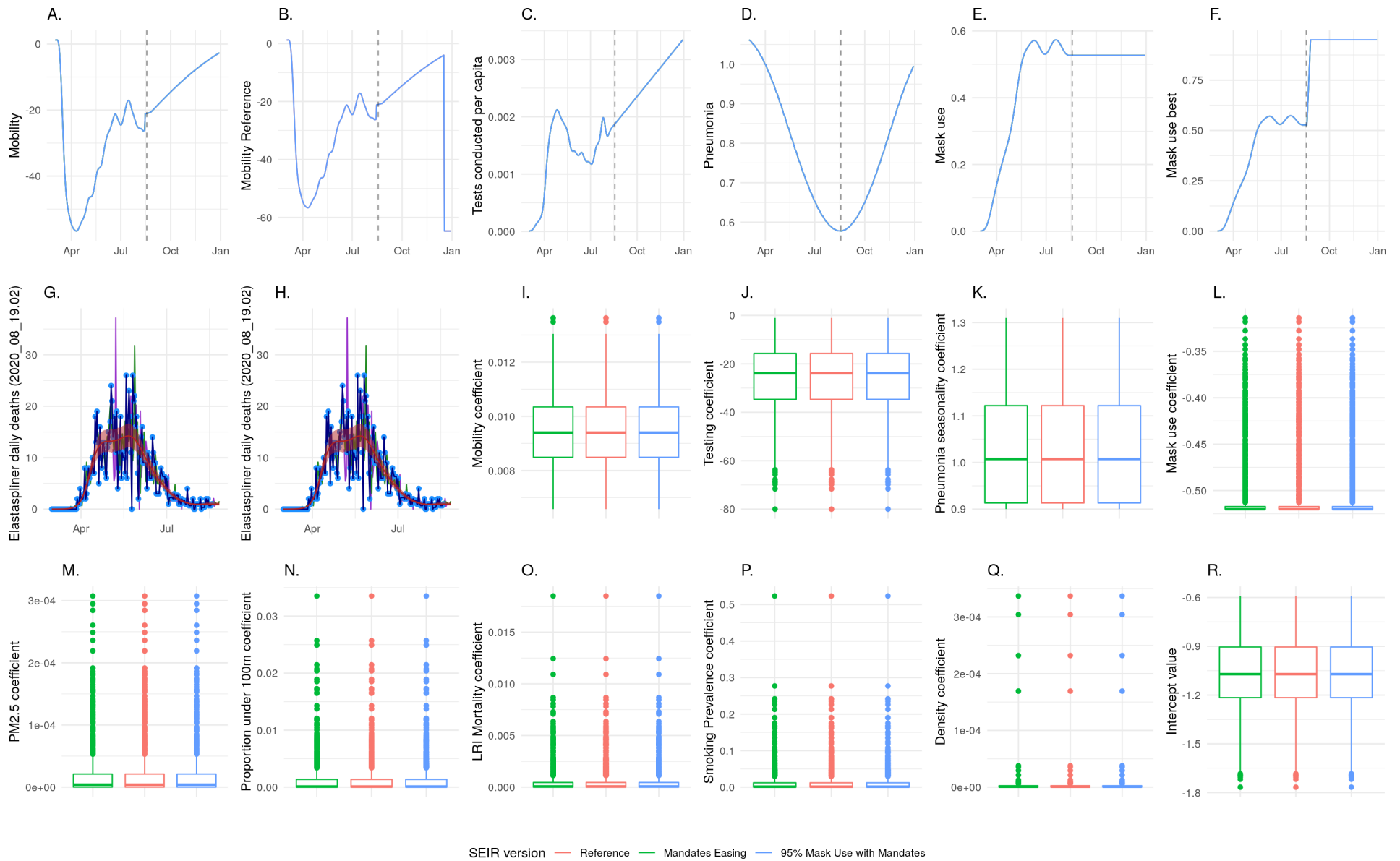
Pennsylvania: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

81 Rhode Island: SEIR fit comparison



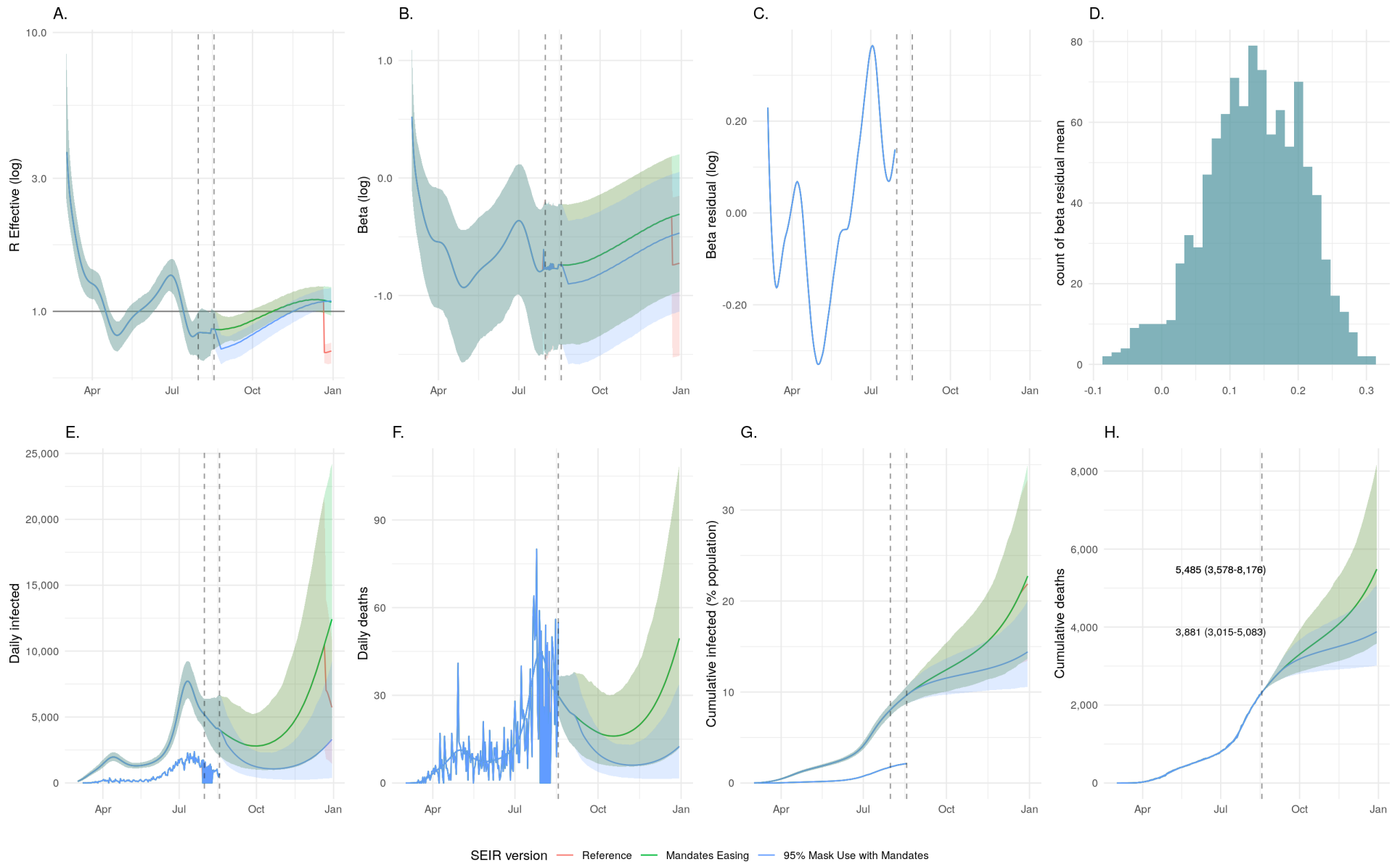
Rhode Island: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

82 Rhode Island: Covariate fits and regression coefficients



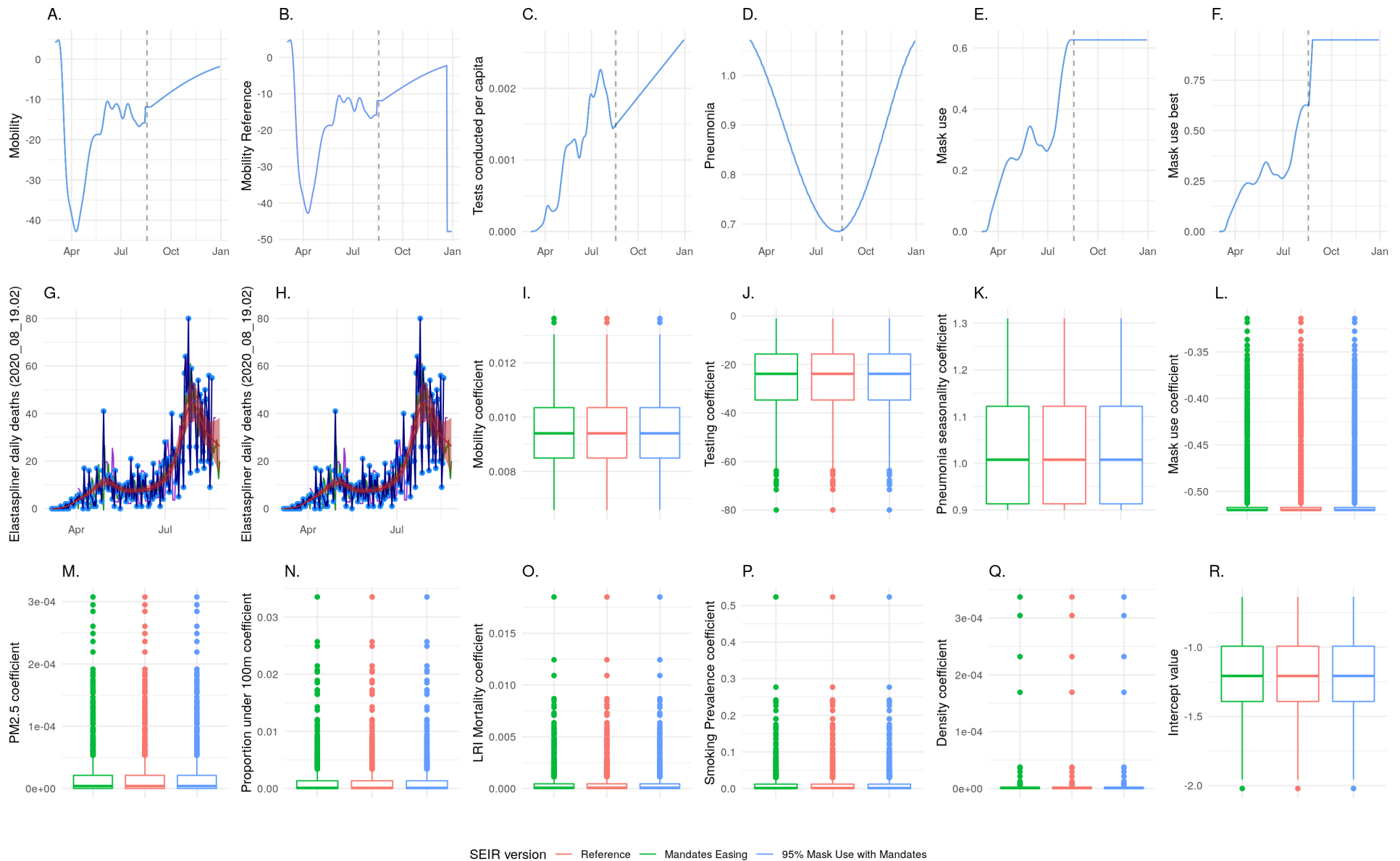
Rhode Island: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

83 South Carolina: SEIR fit comparison



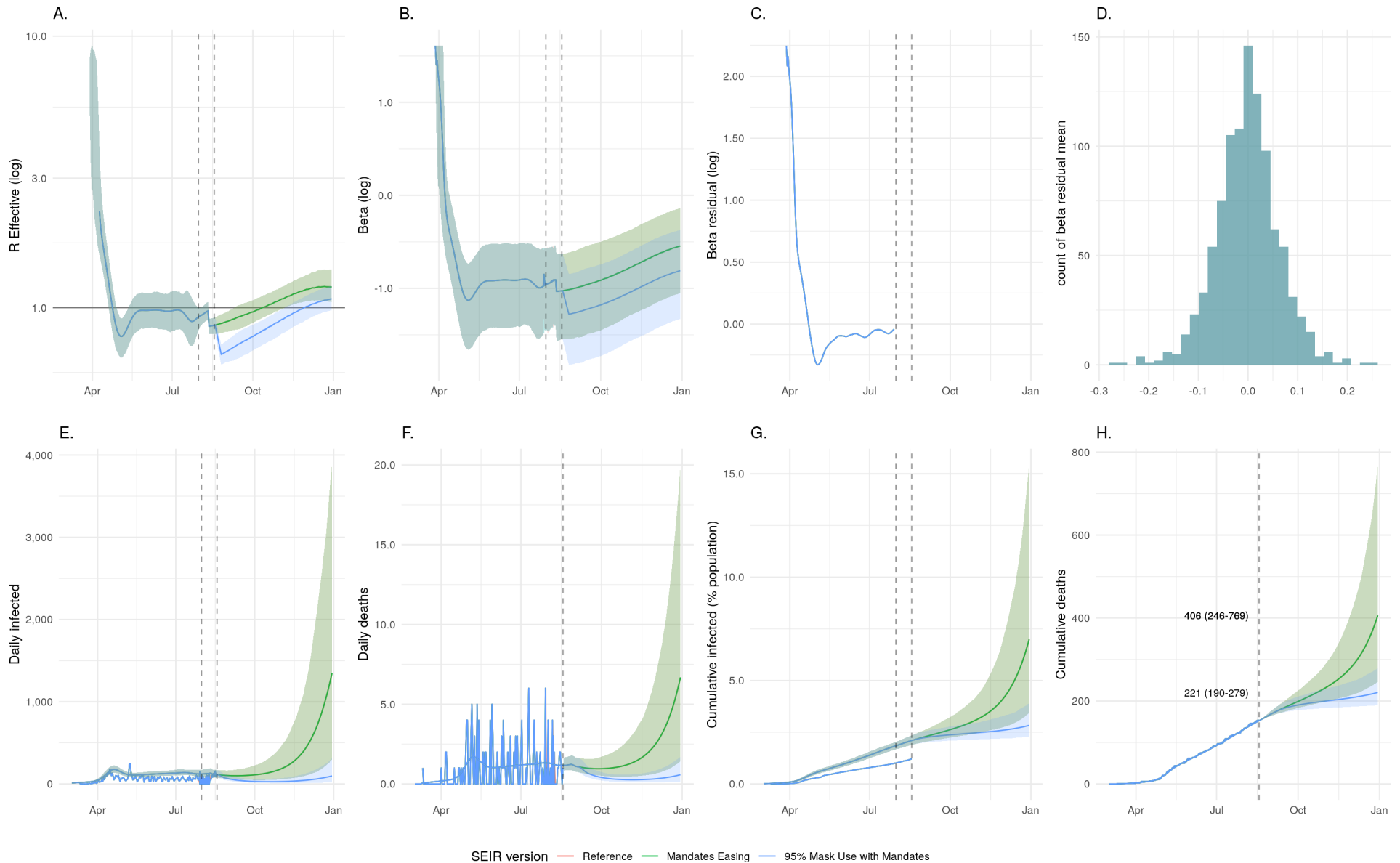
South Carolina: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR *beta* parameter. **C:** residual of predicted *beta* and the observed value calculated directly from infection data over time. **D:** histogram of residual values for *beta*. Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

84 South Carolina: Covariate fits and regression coefficients



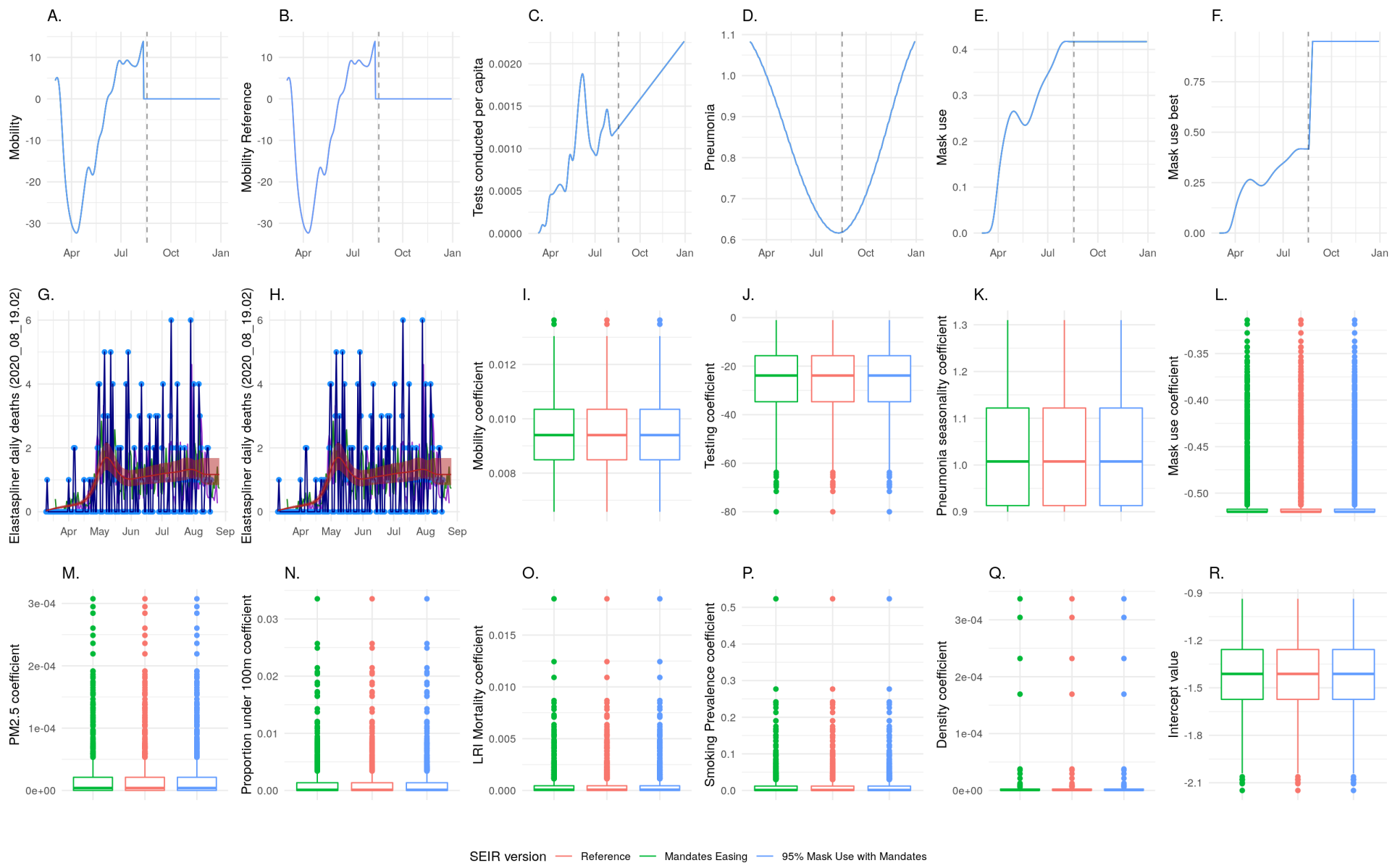
South Carolina: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

85 South Dakota: SEIR fit comparison



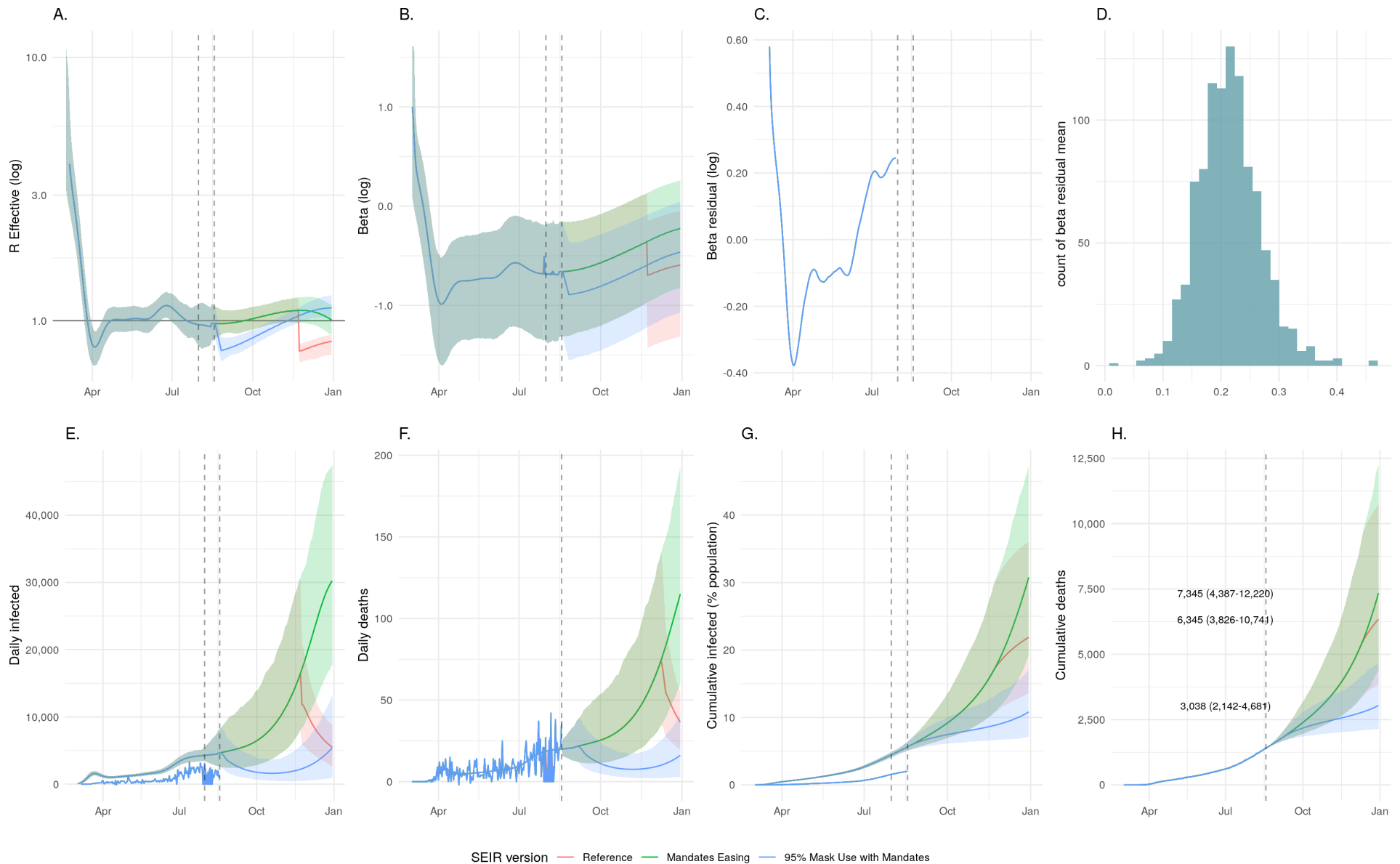
South Dakota: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR *beta* parameter. **C:** residual of predicted *beta* and the observed value calculated directly from infection data over time. **D:** histogram of residual values for *beta*. Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

86 South Dakota: Covariate fits and regression coefficients



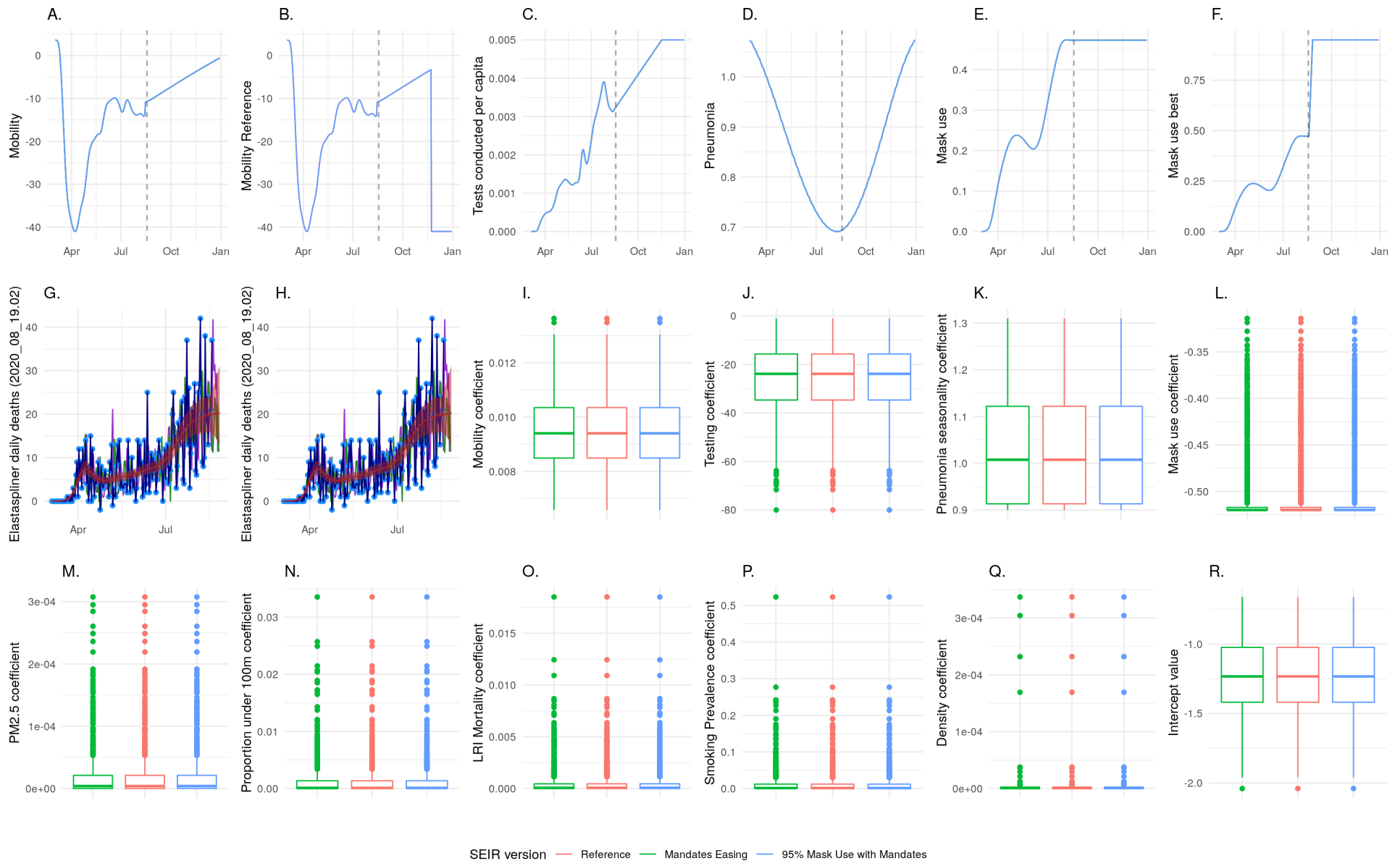
South Dakota: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

87 Tennessee: SEIR fit comparison



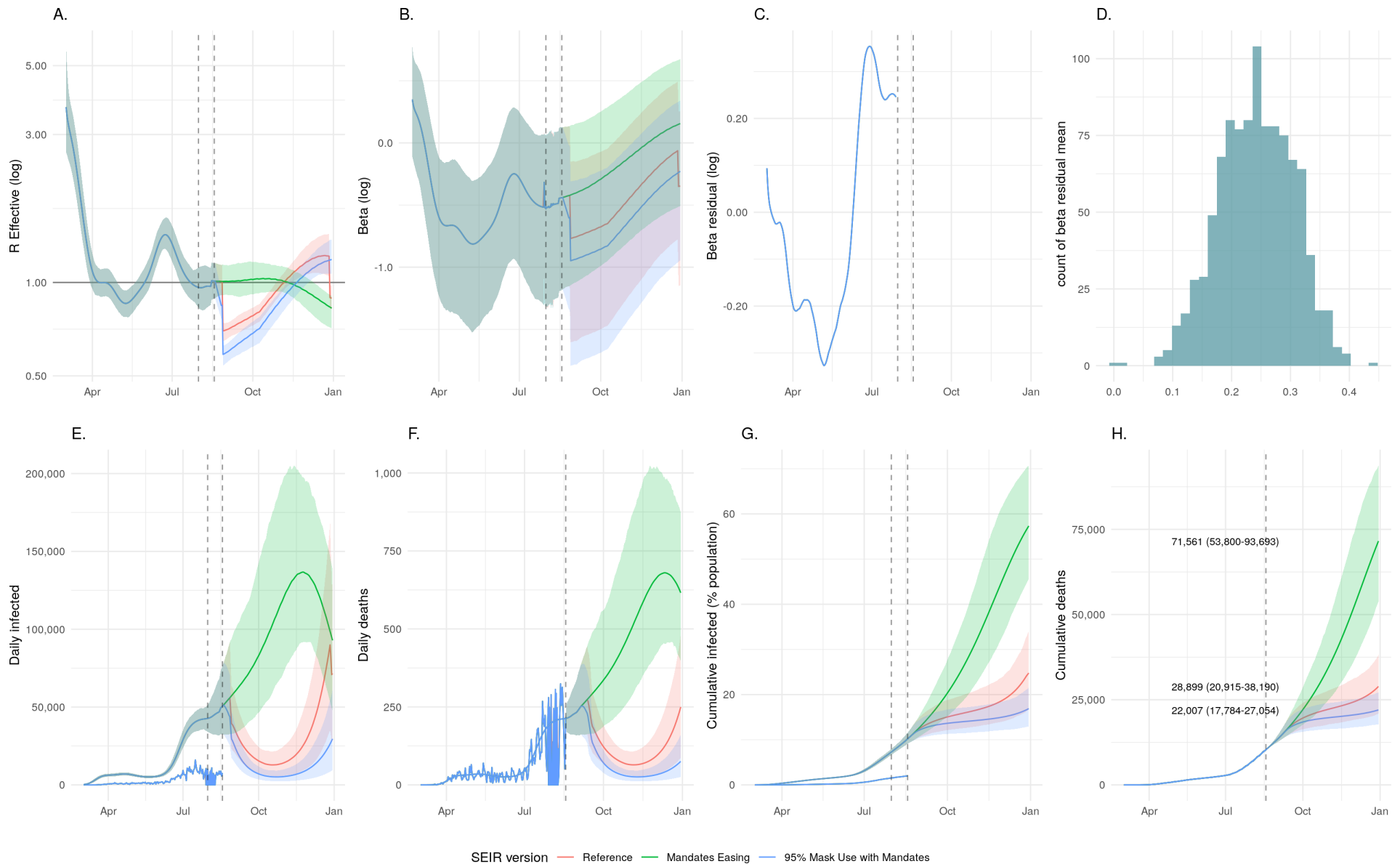
Tennessee: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

88 Tennessee: Covariate fits and regression coefficients



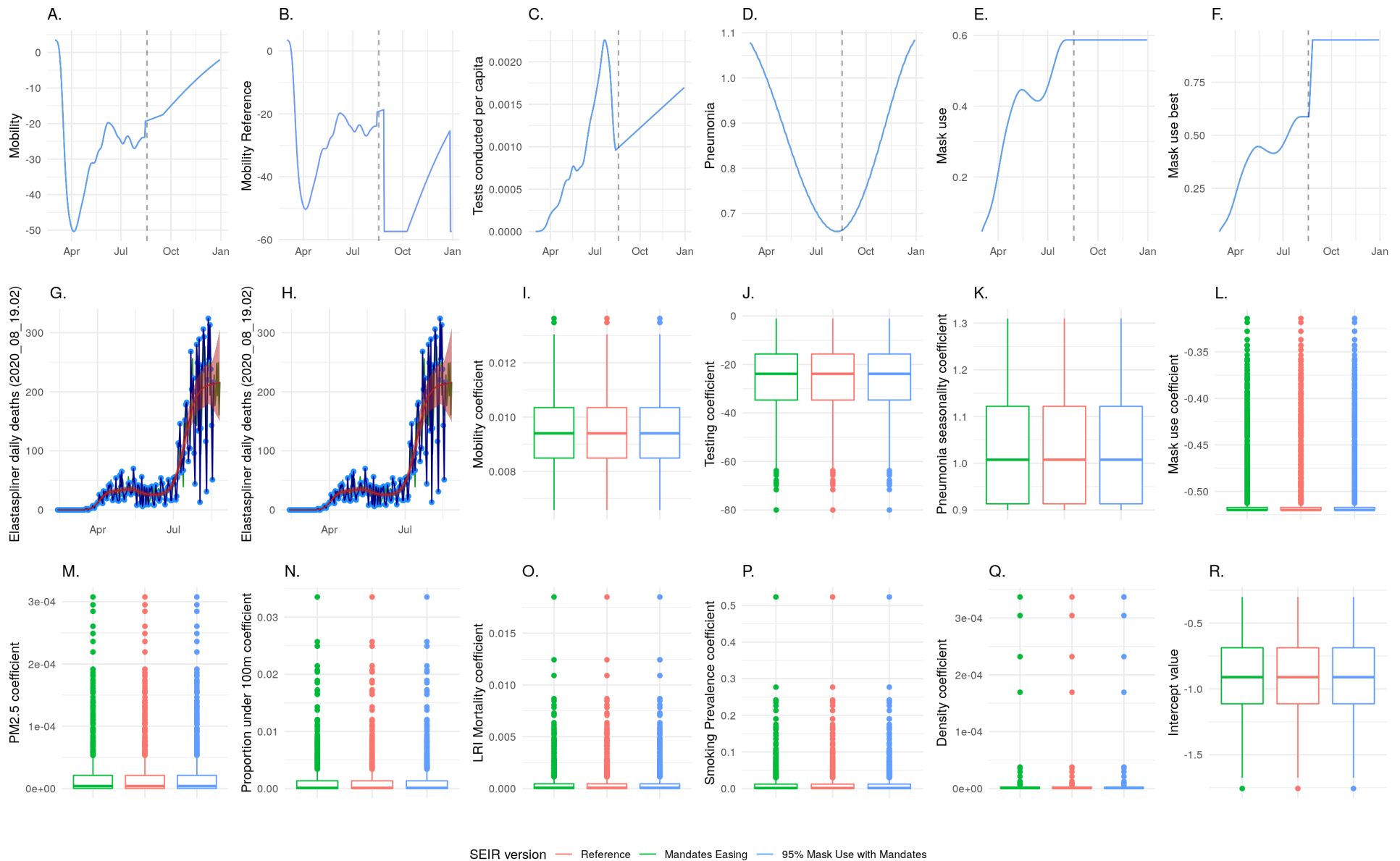
Tennessee: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

89 Texas: SEIR fit comparison



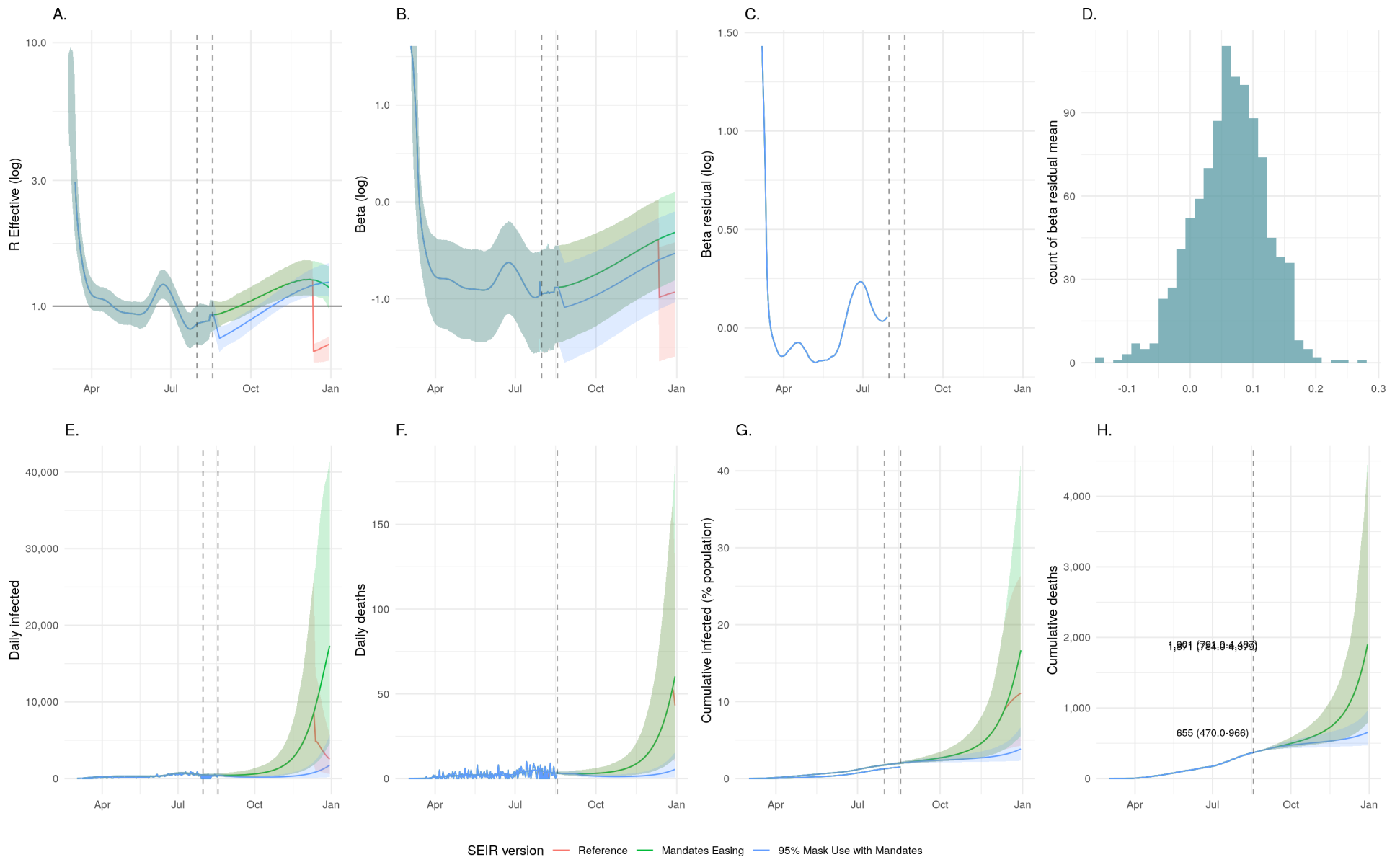
Texas: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

90 Texas: Covariate fits and regression coefficients



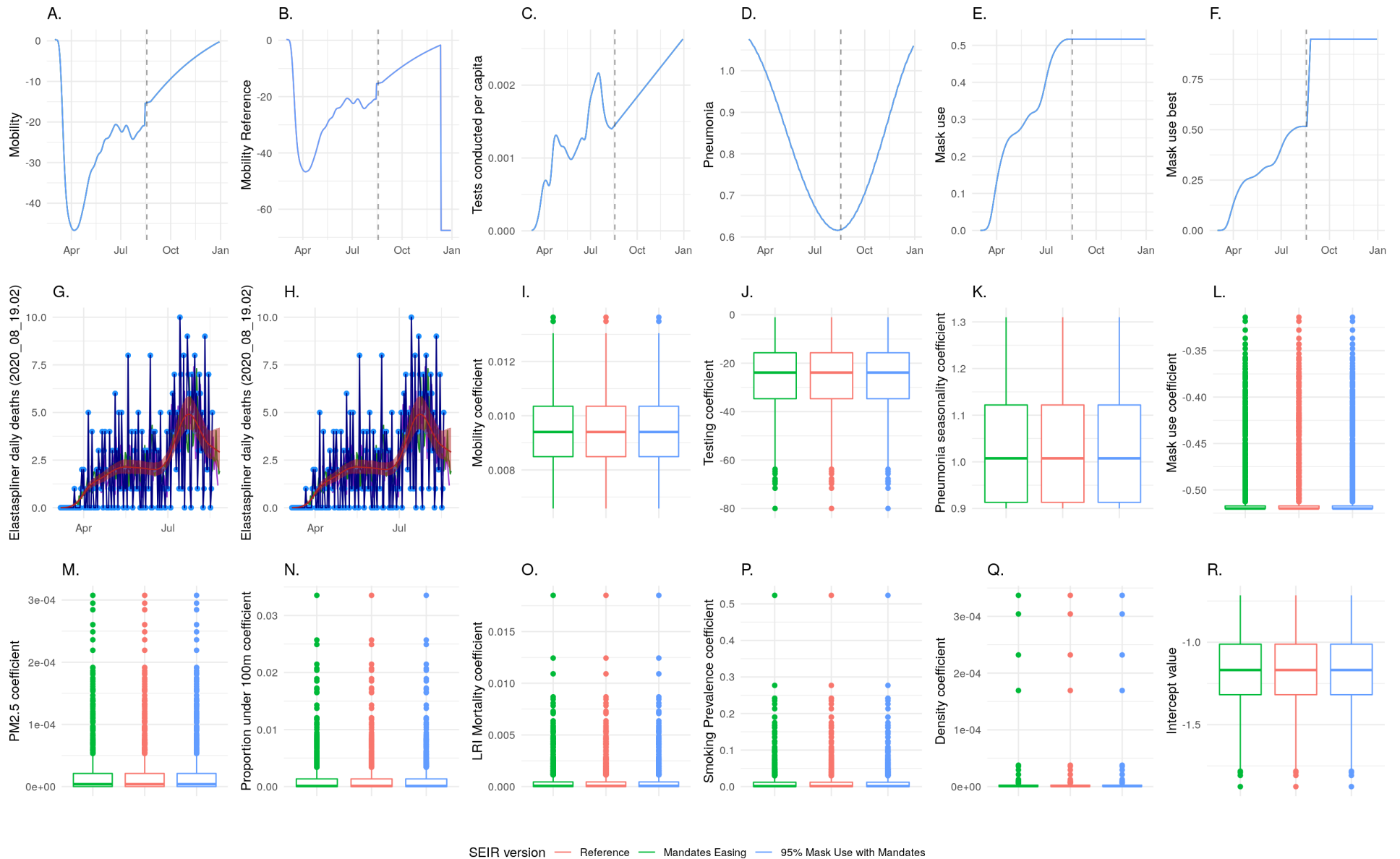
Texas: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

91 Utah: SEIR fit comparison



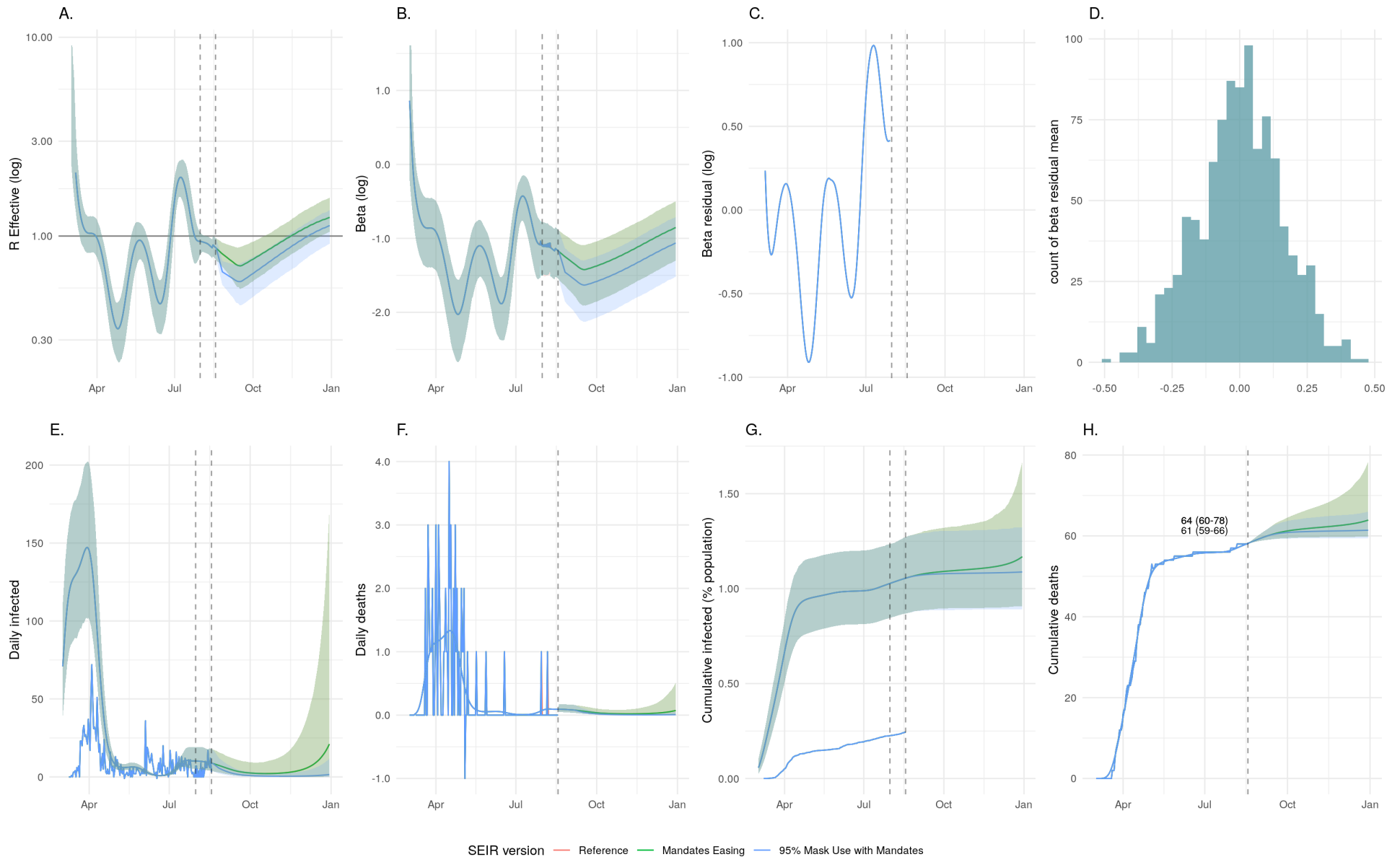
Utah: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

92 Utah: Covariate fits and regression coefficients



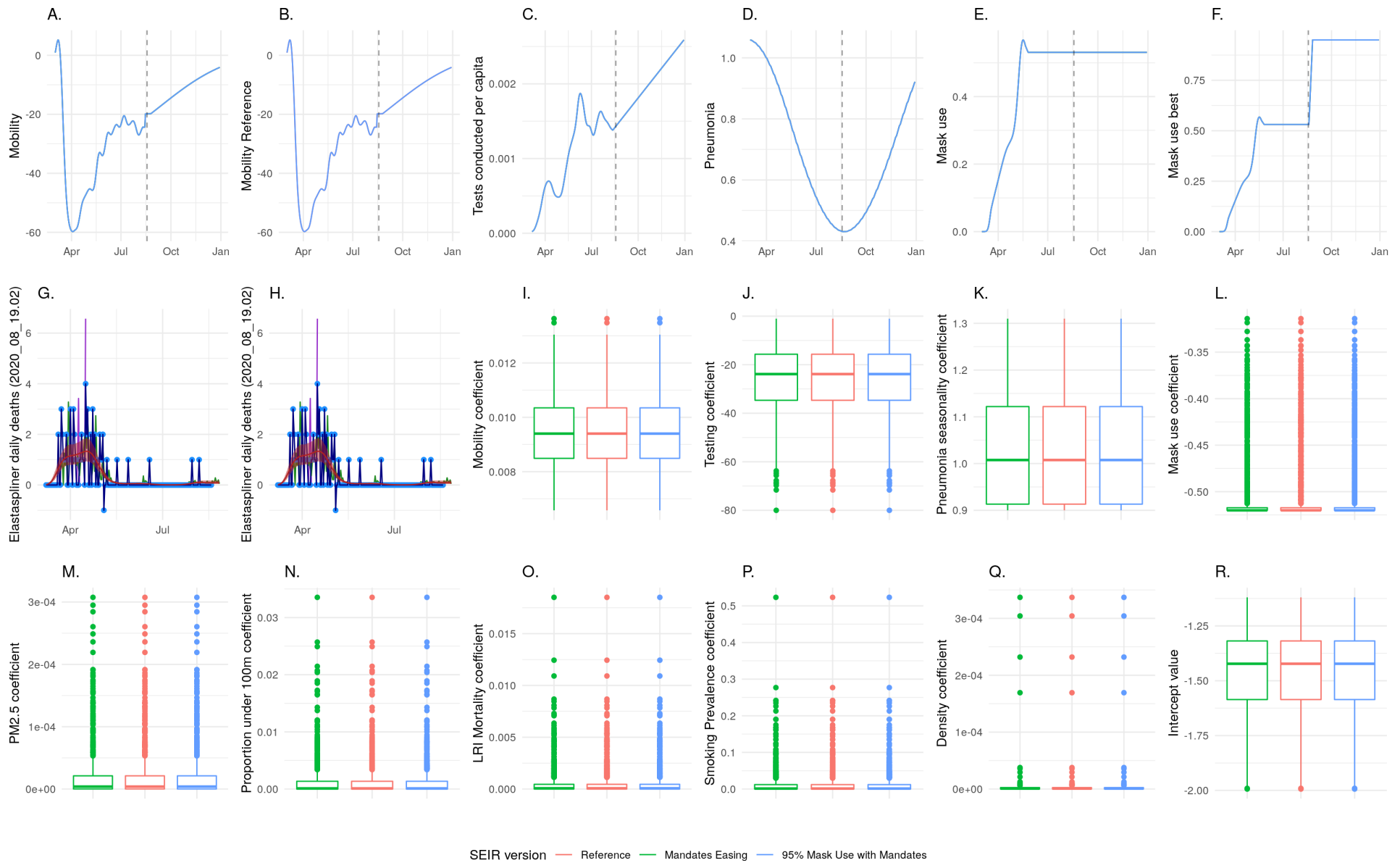
Utah: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

93 Vermont: SEIR fit comparison



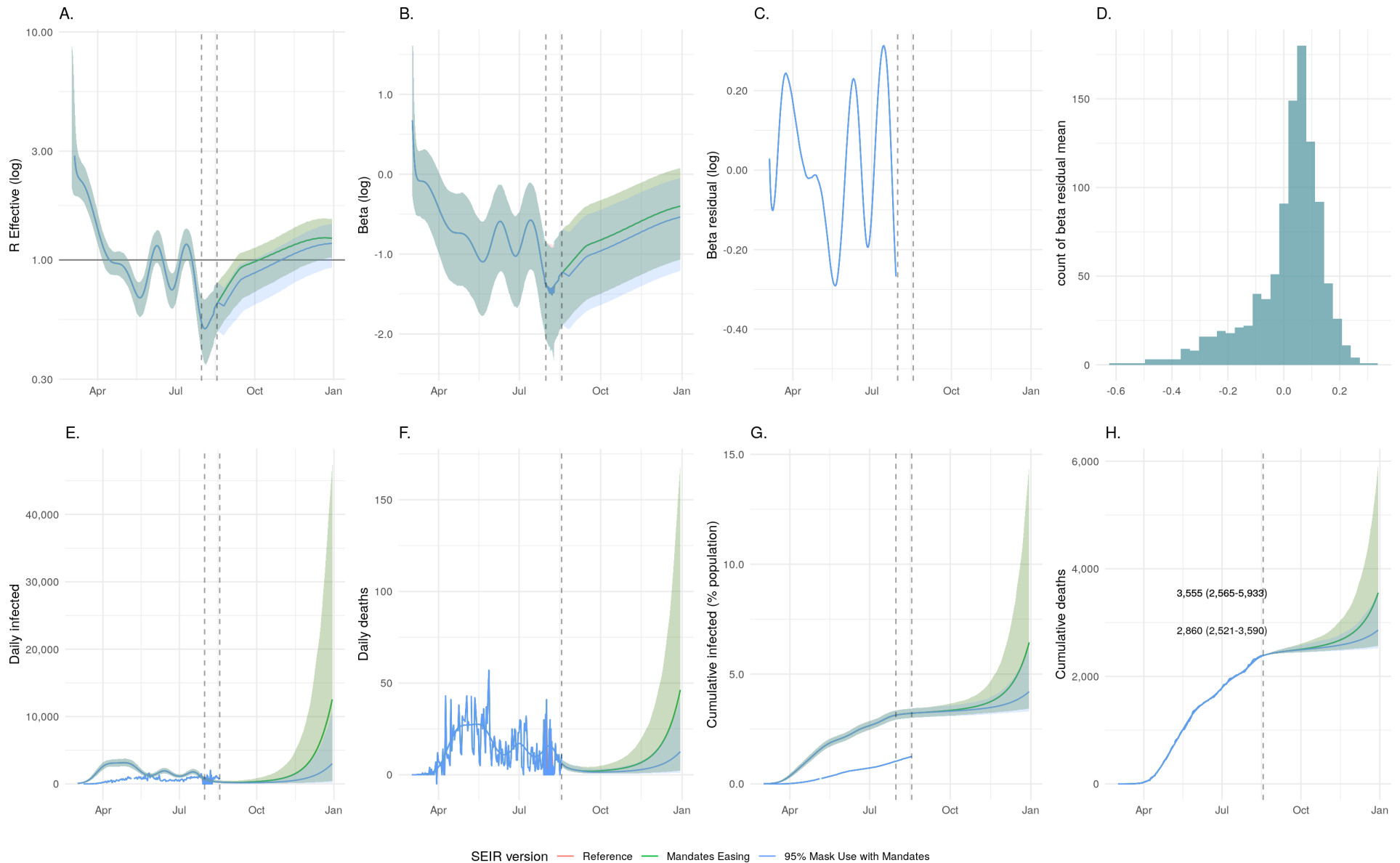
Vermont: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

94 Vermont: Covariate fits and regression coefficients



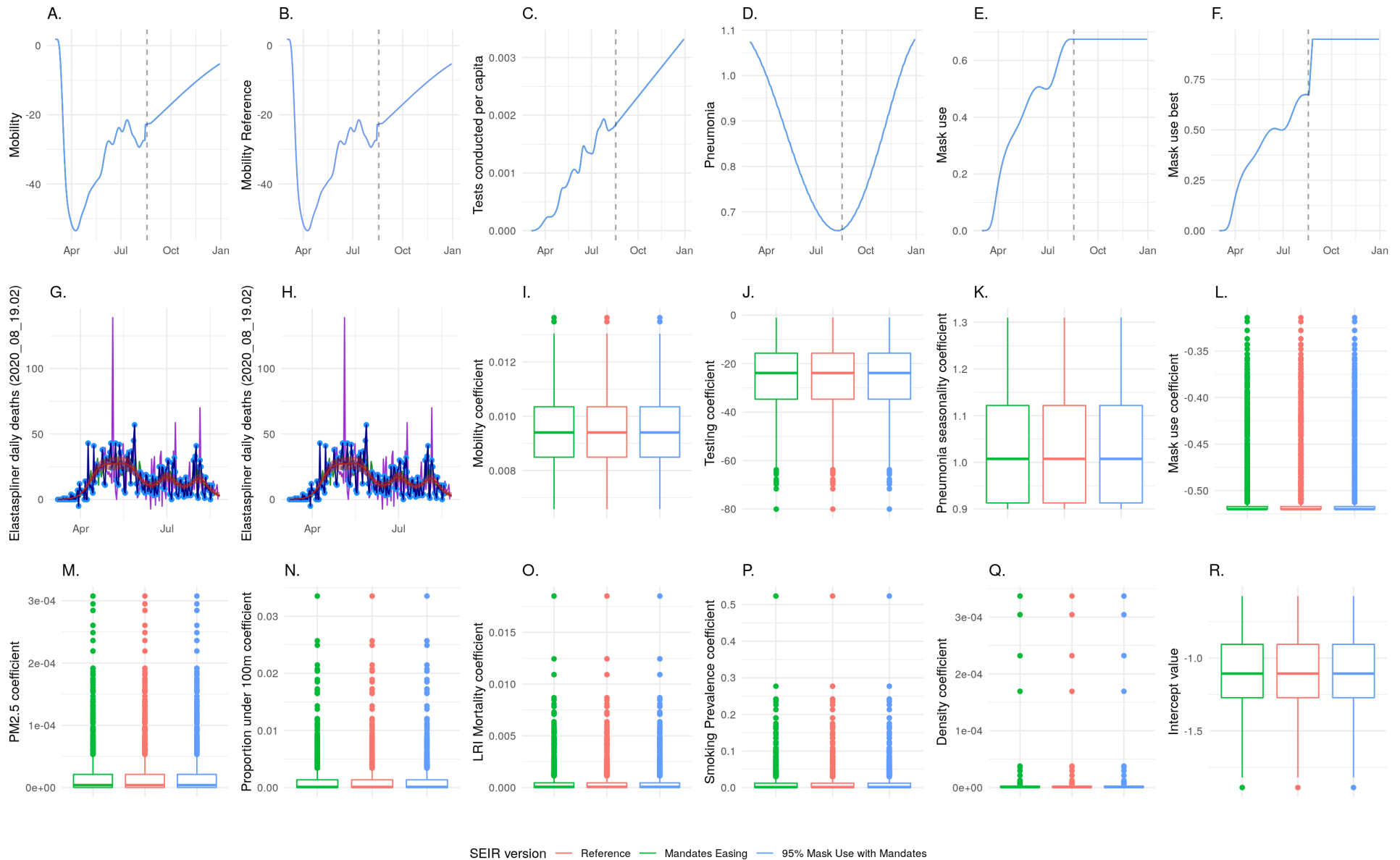
Vermont: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A**) mobility in the absence of additional mandates; **B**) mobility with additional mandates applied; **C**) diagnostic testing per capita; **D**) pneumonia seasonality; **E**) mask use per capita, and; **F**) mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

95 Virginia: SEIR fit comparison



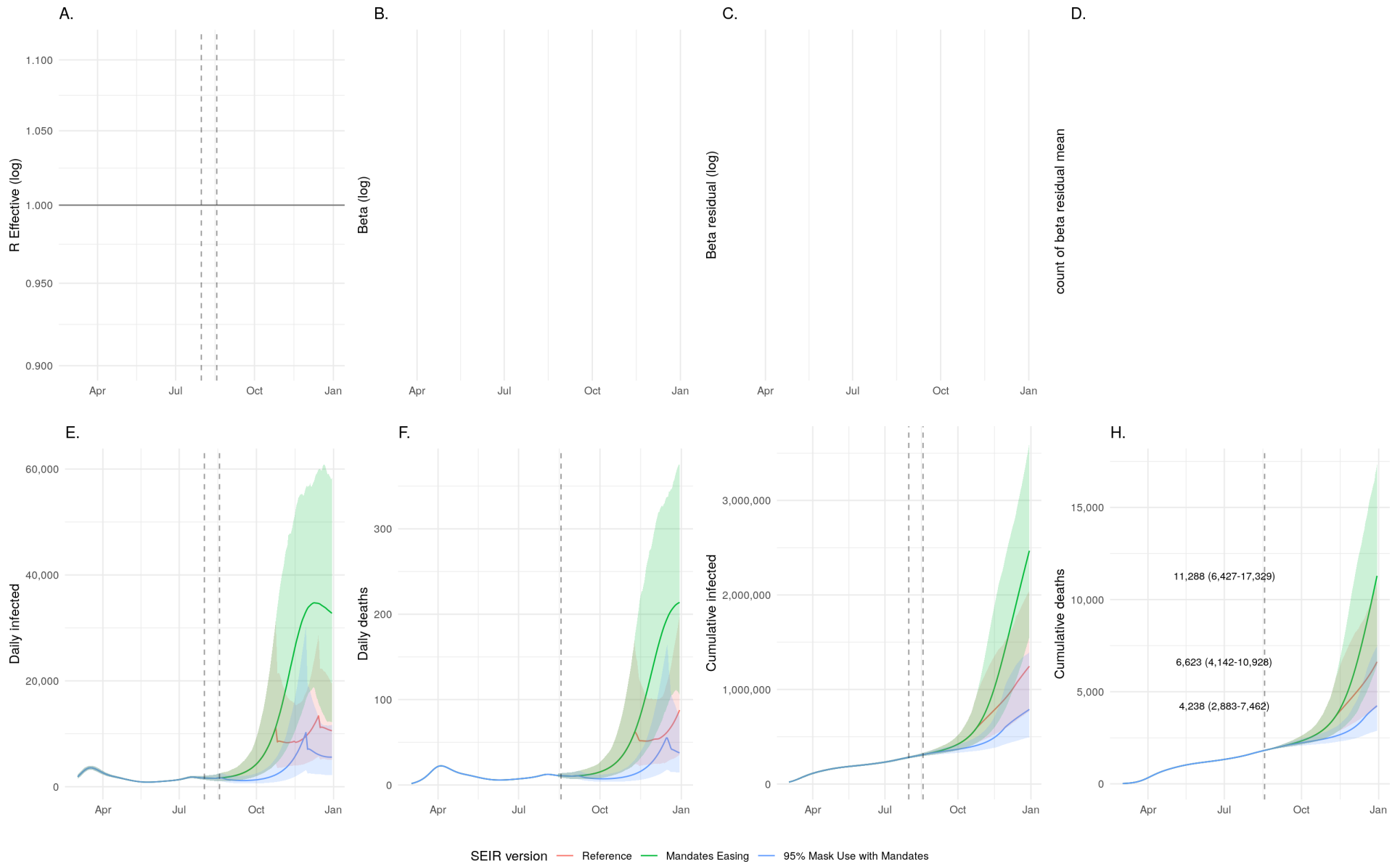
Virginia: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

96 Virginia: Covariate fits and regression coefficients



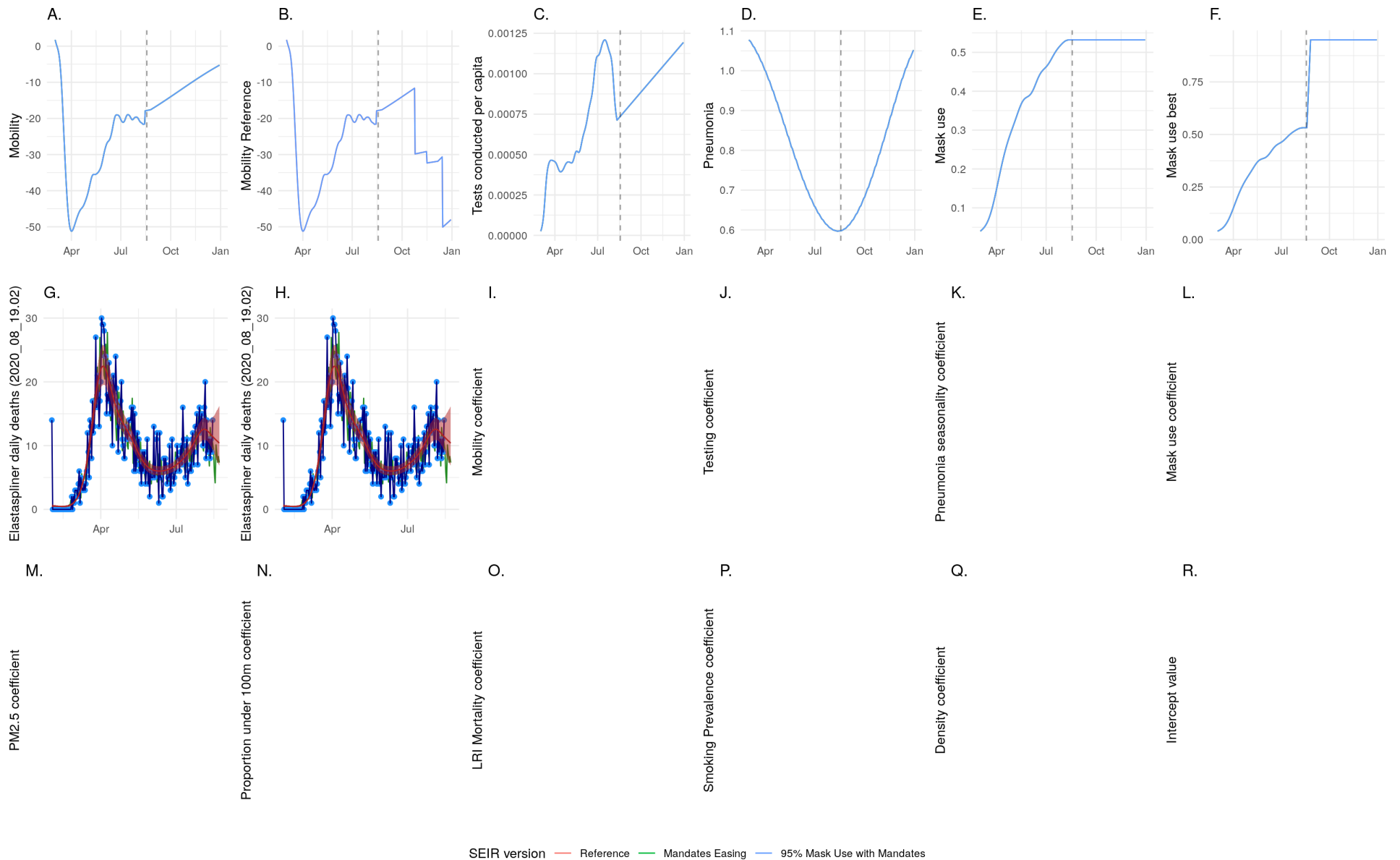
Virginia: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

97 Washington: SEIR fit comparison



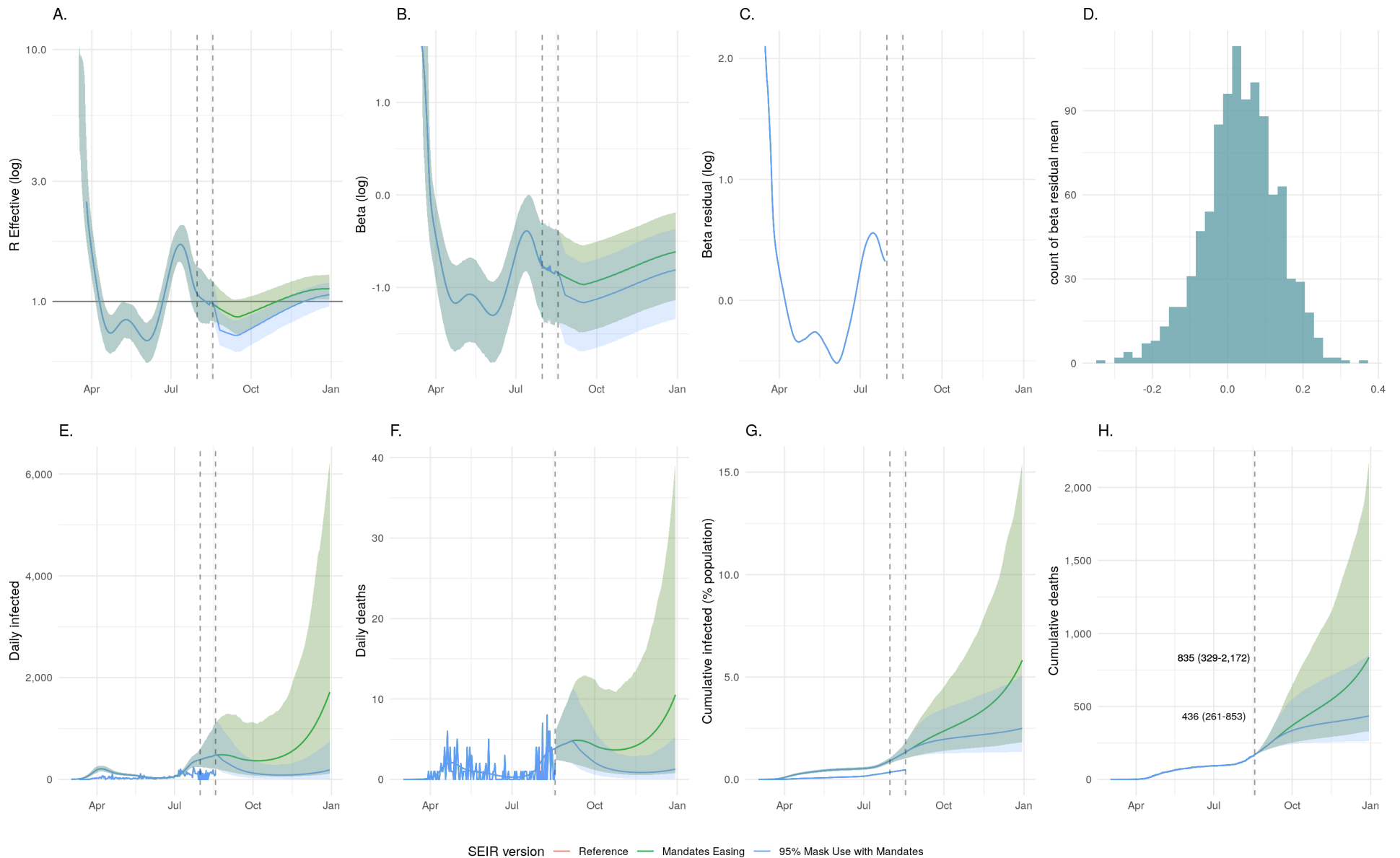
Washington: SEIR fit comparison. Panels **A-D** display values that are not directly calculated for aggregate locations. **E**: predicted daily infections from each model through December 31. **F**: predicted daily deaths from each model through December 31. **G**: predicted cumulative infections through December 31, as a proportion of the total population. **H**: predicted cumulative deaths through December 31. In panels **E**, **F**, **G**, and **H**, reported death and infections are plotted alongside model predictions in light blue.

98 Washington: Covariate fits and regression coefficients



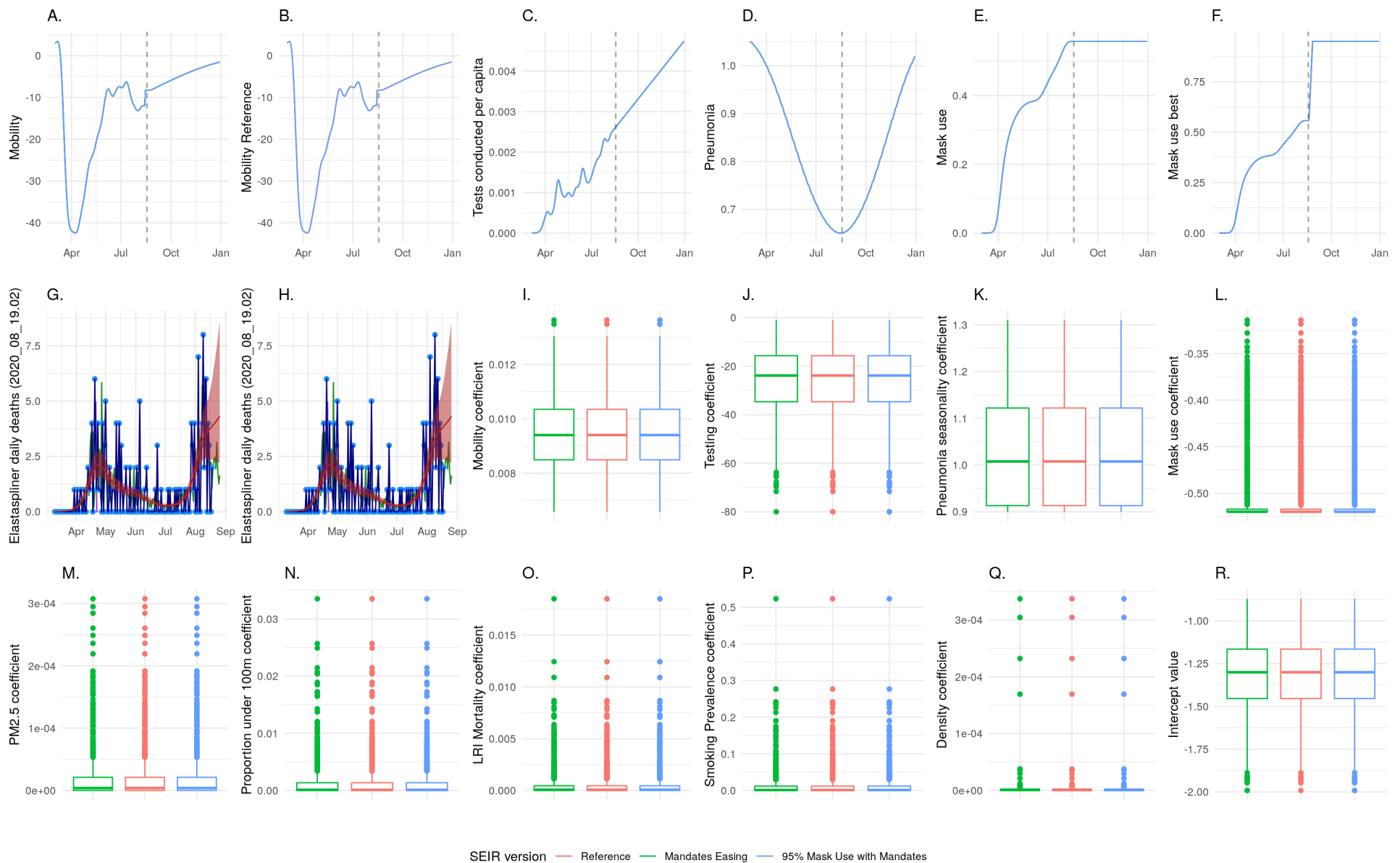
Washington: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). Panels **I-R** display coefficients for a regression fit to $\log(\beta)$, which is not applicable to aggregate locations.

99 West Virginia: SEIR fit comparison



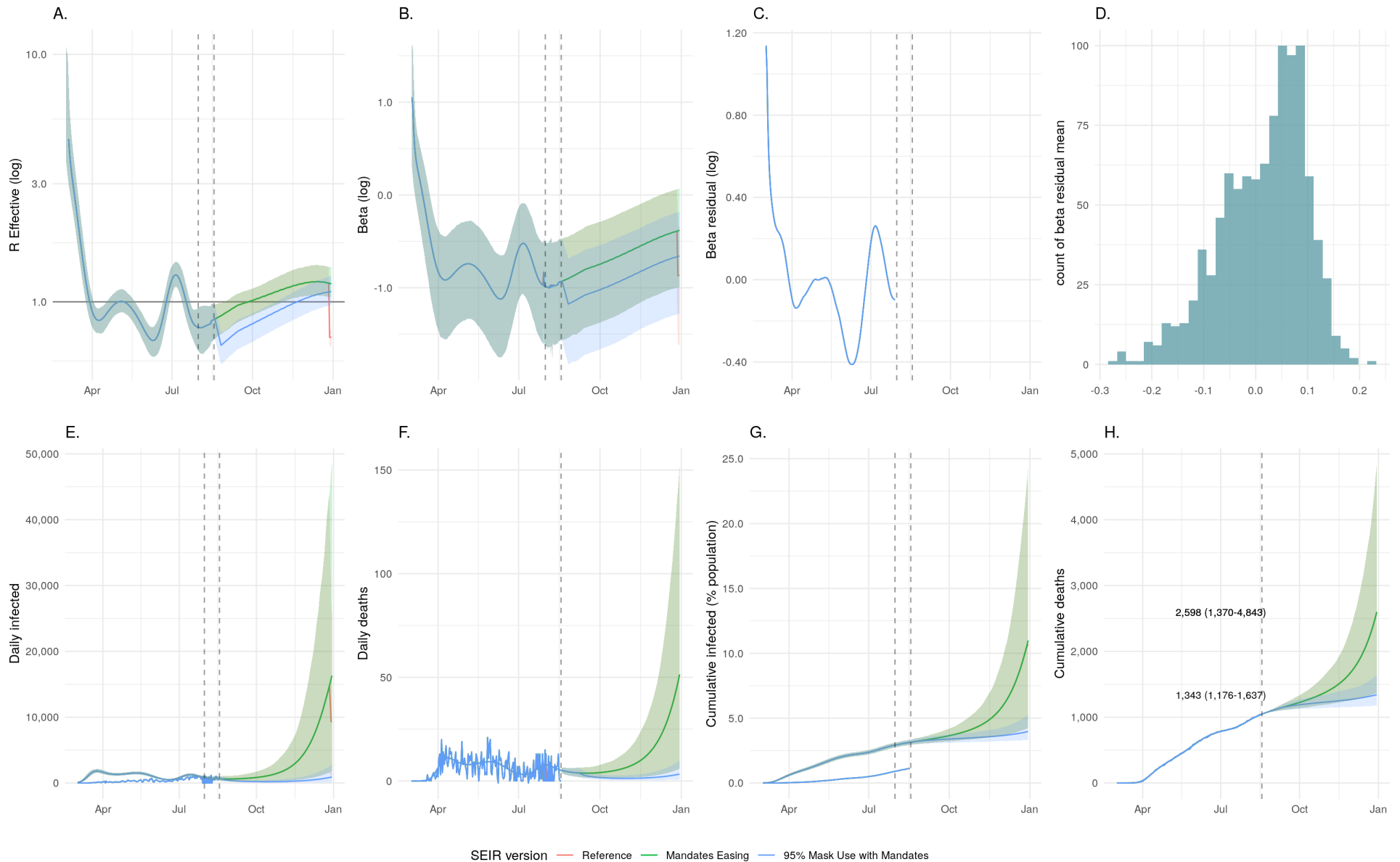
West Virginia: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR *beta* parameter. **C:** residual of predicted *beta* and the observed value calculated directly from infection data over time. **D:** histogram of residual values for *beta*. Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

100 West Virginia: Covariate fits and regression coefficients



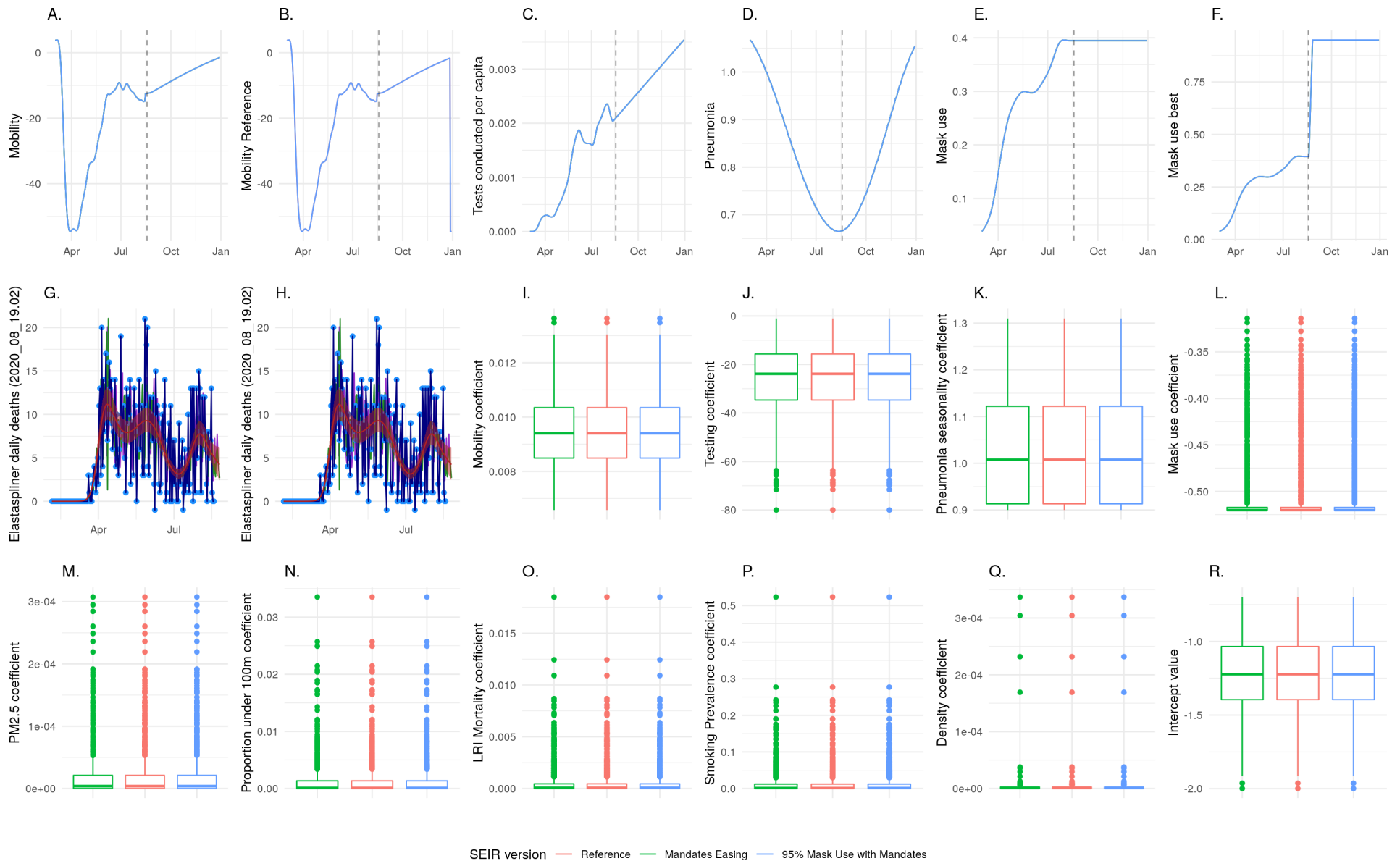
West Virginia: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

101 Wisconsin: SEIR fit comparison



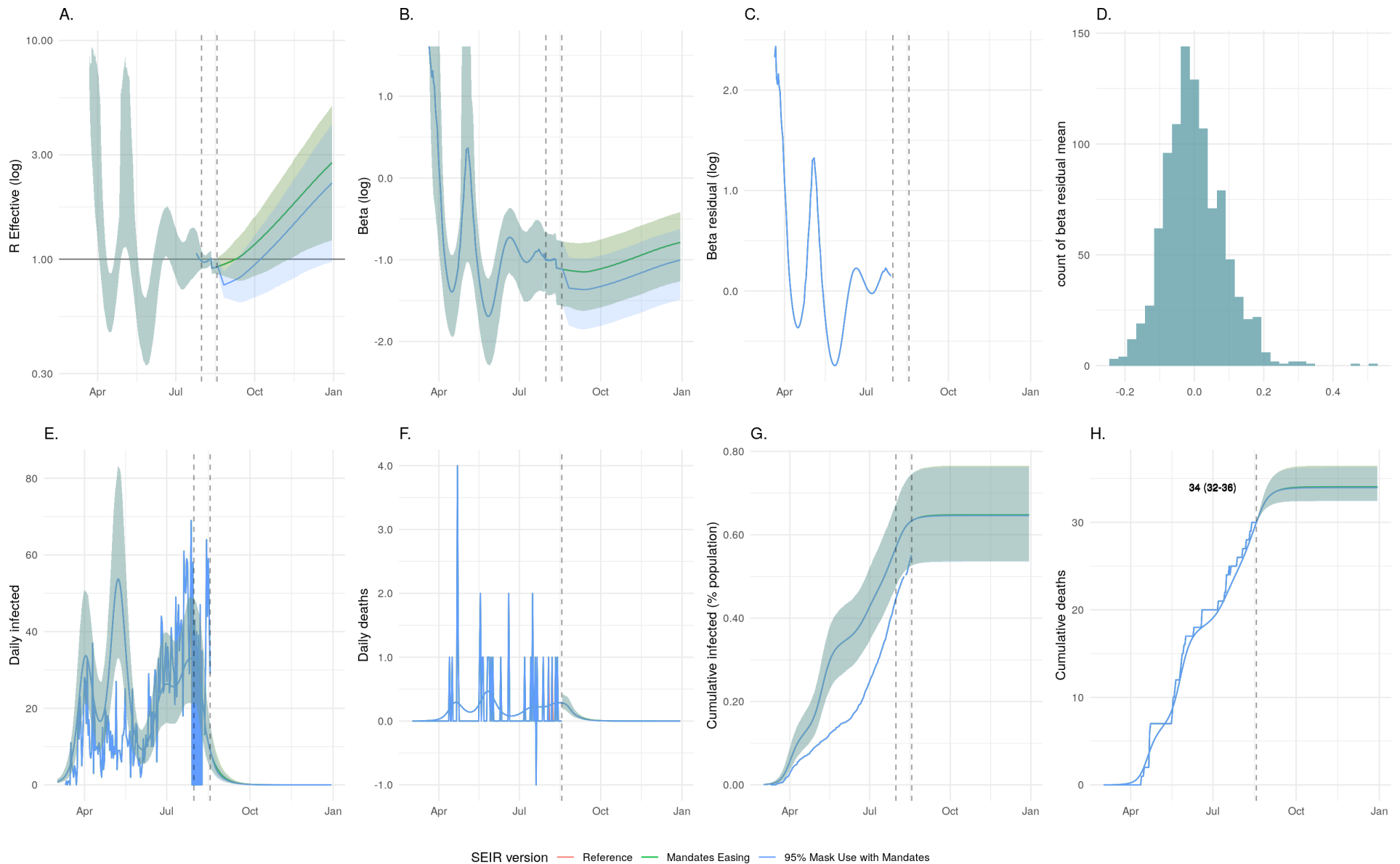
Wisconsin: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR *beta* parameter. **C:** residual of predicted *beta* and the observed value calculated directly from infection data over time. **D:** histogram of residual values for *beta*. Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

102 Wisconsin: Covariate fits and regression coefficients



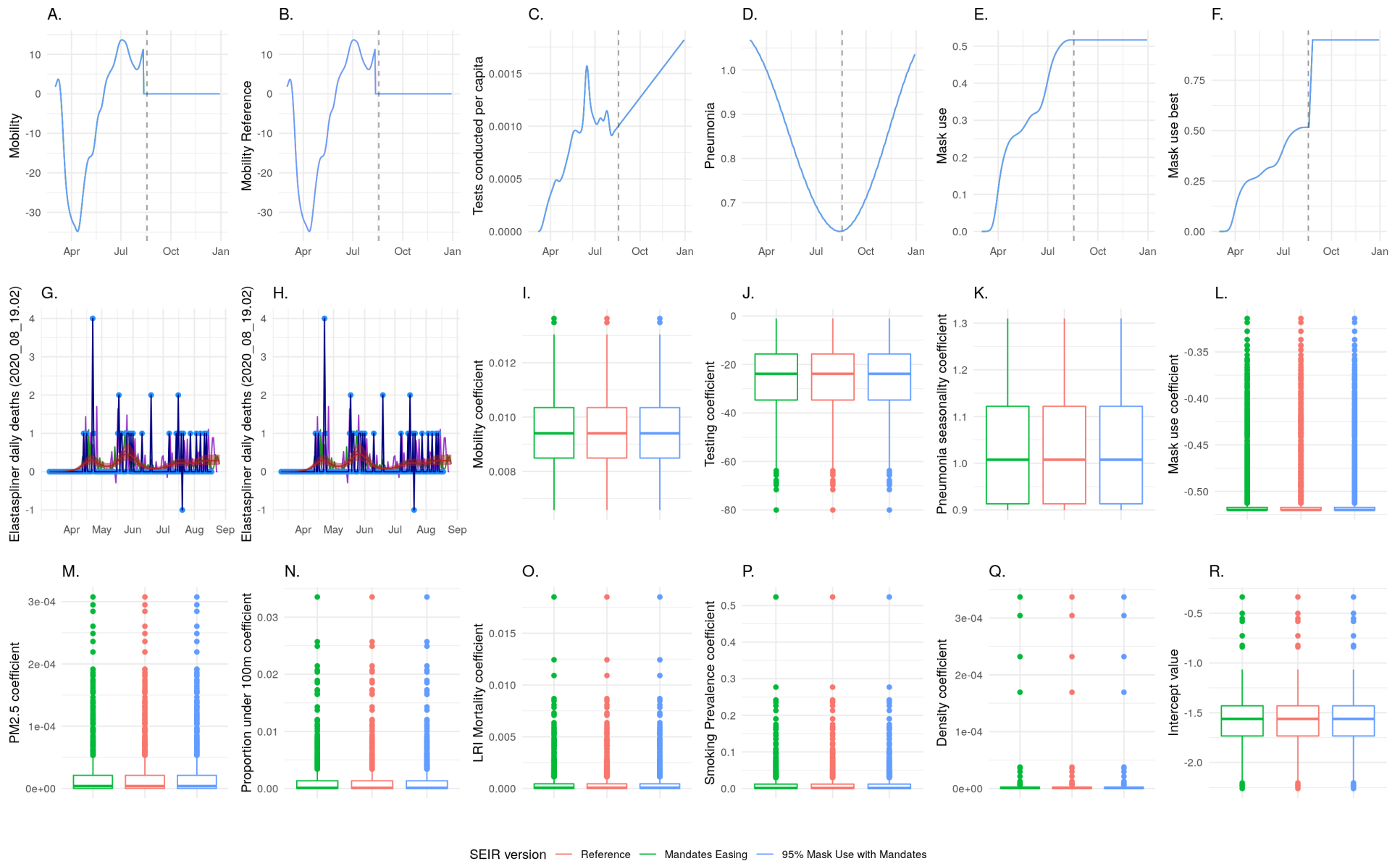
Wisconsin: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

103 Wyoming: SEIR fit comparison



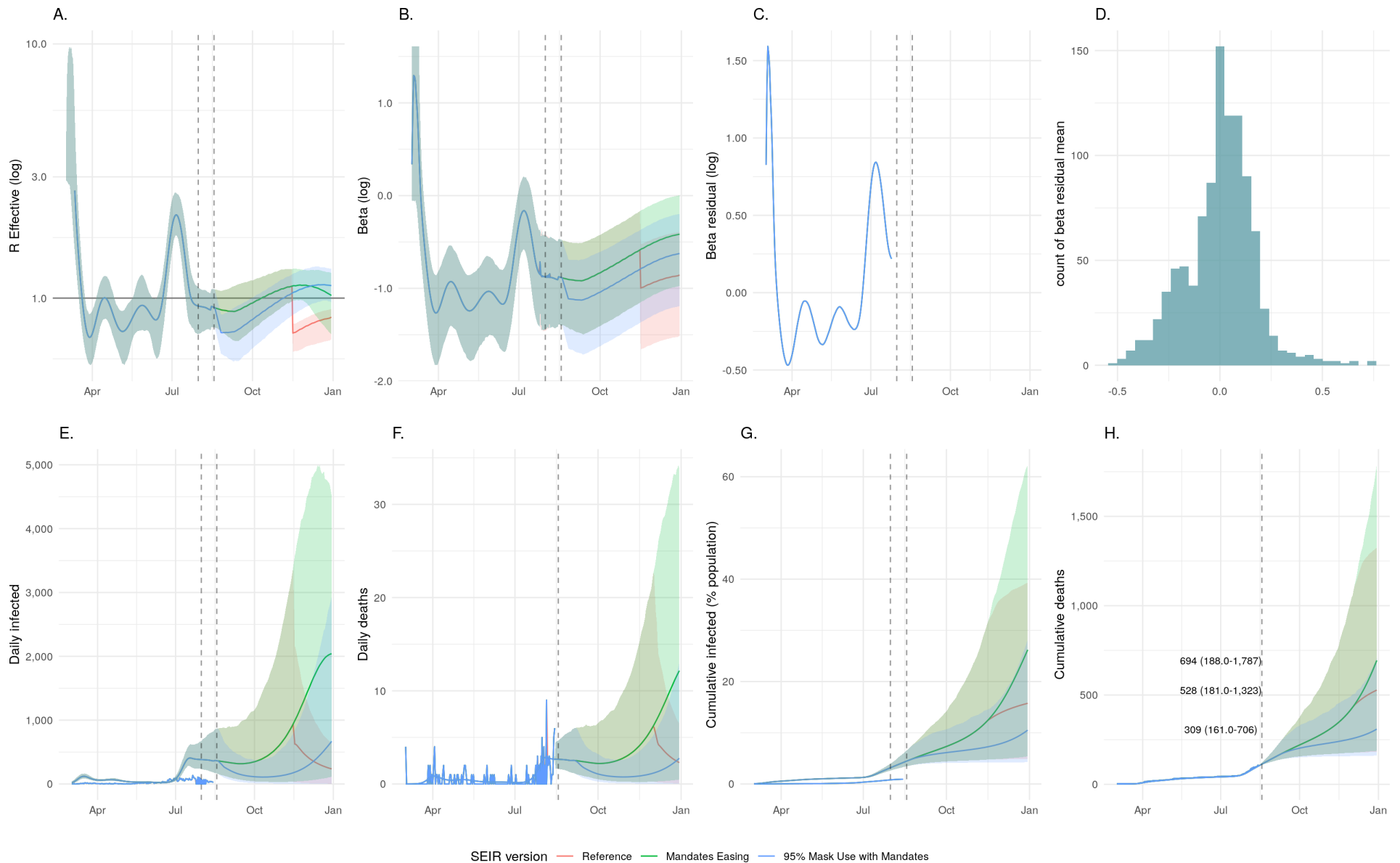
Wyoming: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

104 Wyoming: Covariate fits and regression coefficients



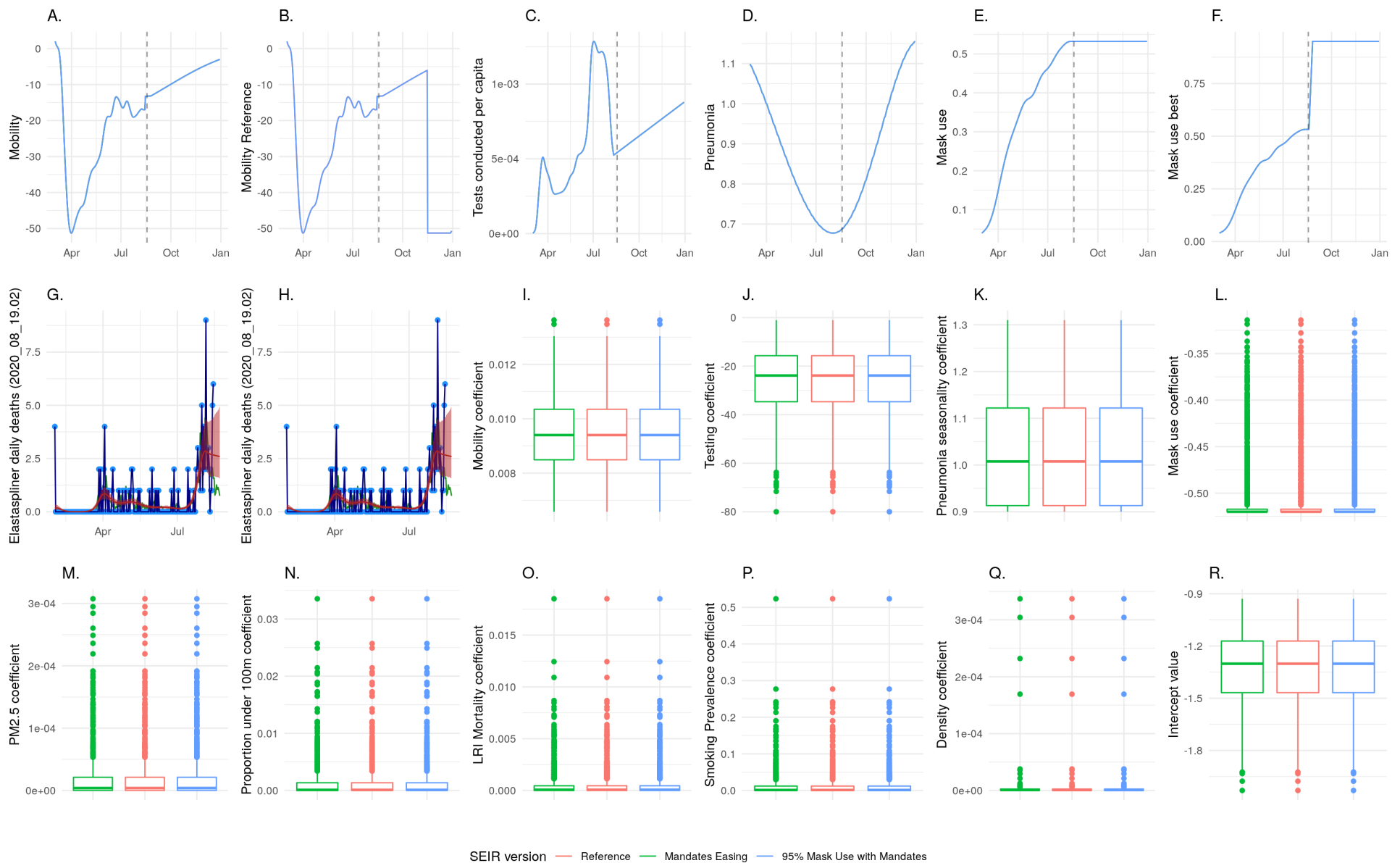
Wyoming: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

105 Spokane County: SEIR fit comparison



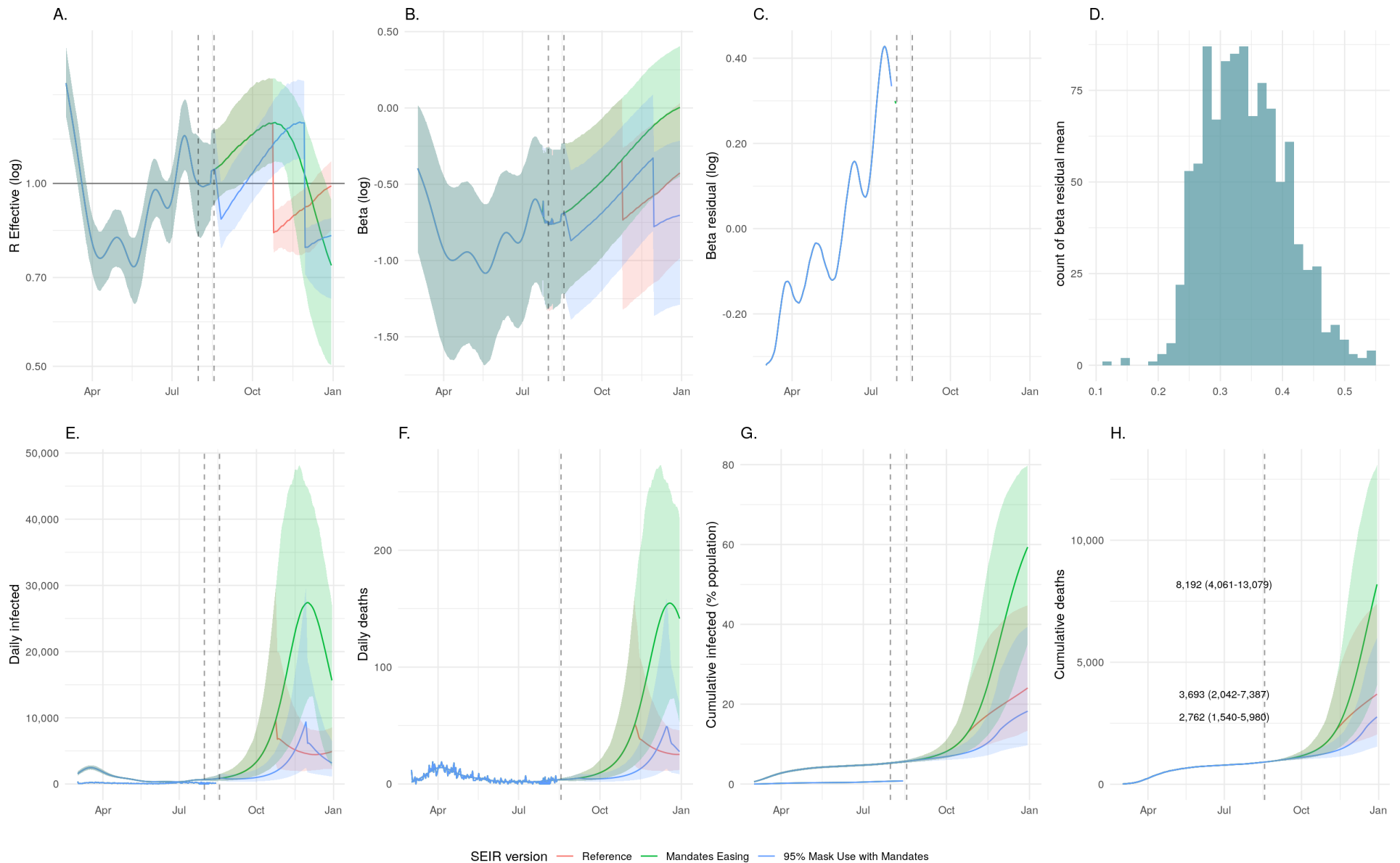
Spokane County: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR *beta* parameter. **C:** residual of predicted *beta* and the observed value calculated directly from infection data over time. **D:** histogram of residual values for *beta*. Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

106 Spokane County: Covariate fits and regression coefficients



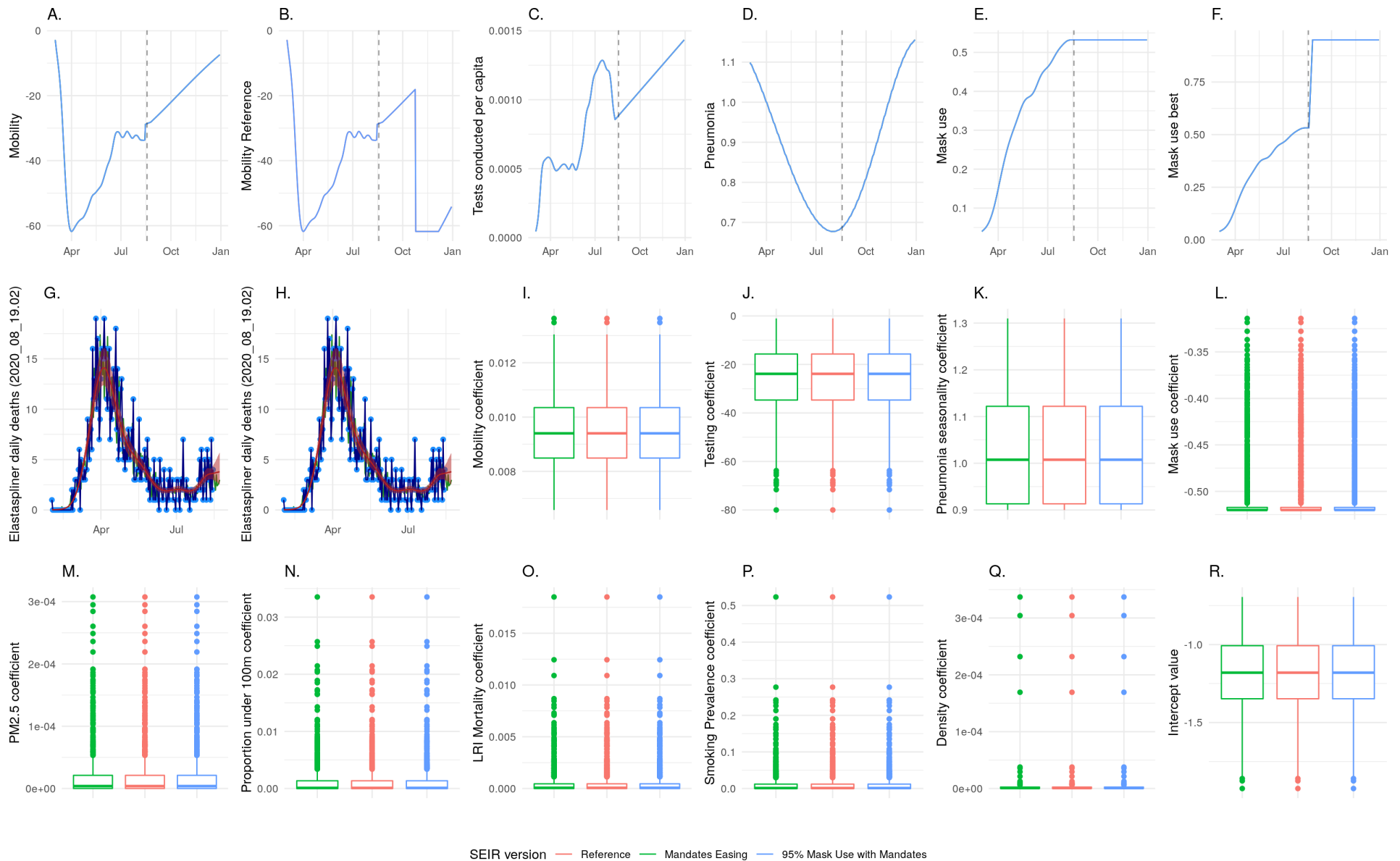
Spokane County: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

107 King and Snohomish Counties: SEIR fit comparison



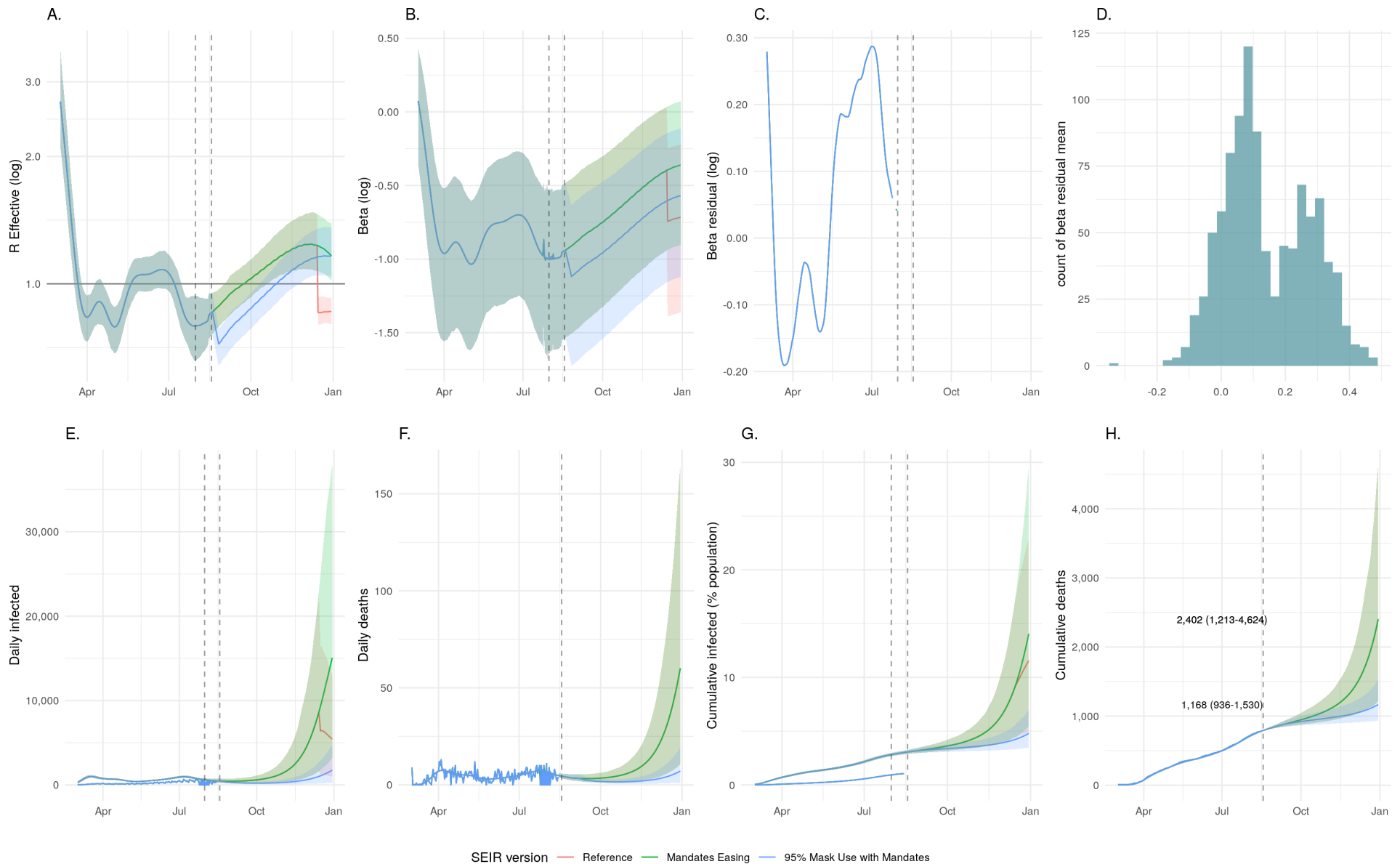
King and Snohomish Counties: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in light blue.

108 King and Snohomish Counties: Covariate fits and regression coefficients



King and Snohomish Counties: Covariate fits and regression coefficients. **A-F:** Line plots showing predicted covariate time trends for **A)** mobility in the absence of additional mandates; **B)** mobility with additional mandates applied; **C)** diagnostic testing per capita; **D)** pneumonia seasonality; **E)** mask use per capita, and; **F)** mask use in a scenario where adherence increases to 95% of the population. **G-H:** COVID mortality data generated from reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R:** Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.

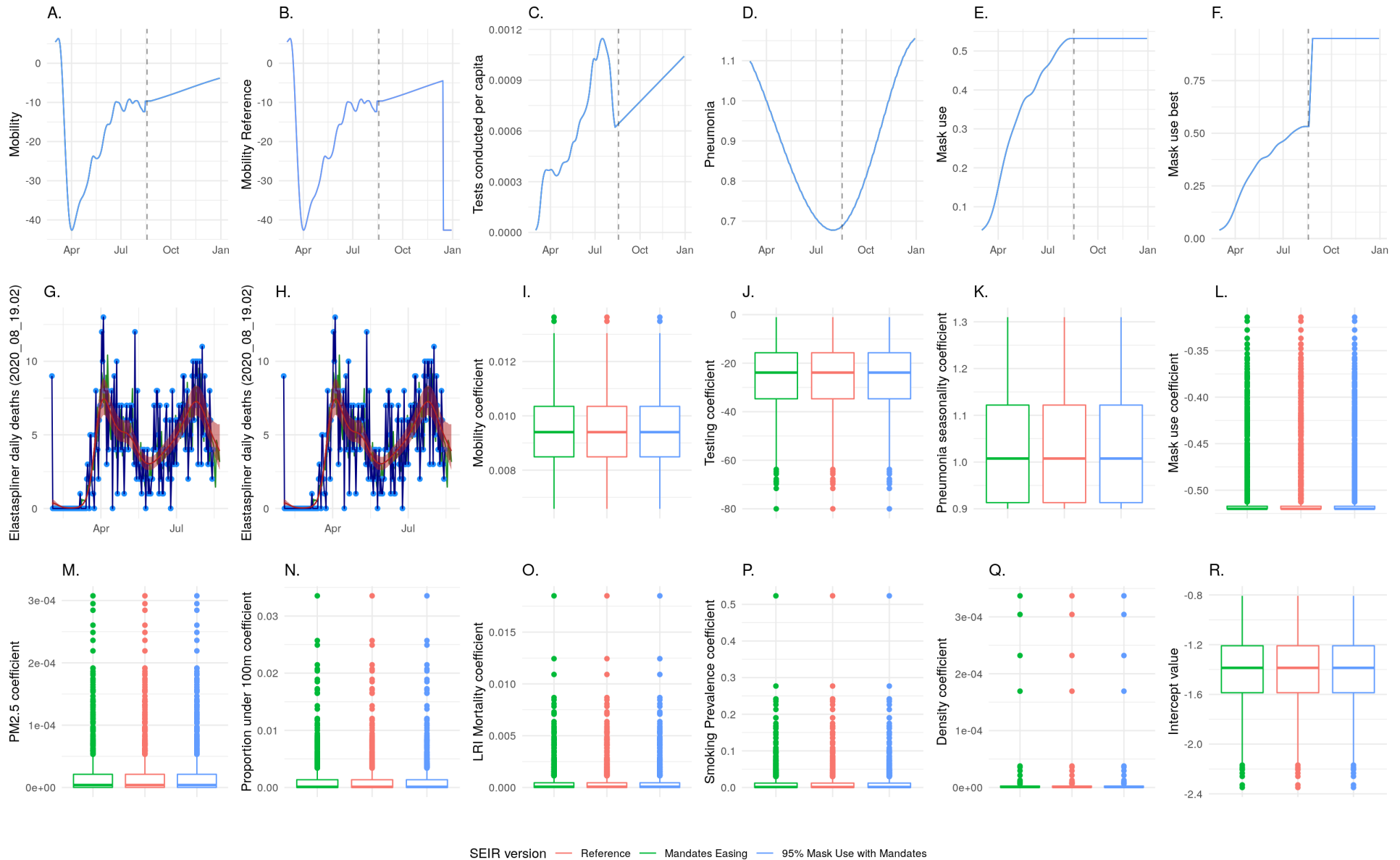
109 Washington except for King, Snohomish, and Spokane Counties: SEIR fit comparison



Washington except for King, Snohomish, and Spokane Counties: SEIR fit comparison. **A:** predicted R effective for each model through December 31. **B:** predicted SEIR β parameter. **C:** residual of predicted β and the observed value calculated directly from infection data over time. **D:** histogram of residual values for β . Panels A, B, C, and D are all displayed in log space, reflecting the space in which the SEIR model is fit. **E:** predicted daily infections from each model through December 31. **F:** predicted daily deaths from each model through December 31. **G:** predicted cumulative infections through December 31, as a proportion of the total population. **H:** predicted cumulative deaths through December 31. In panels E, F, G, and H, reported death and infections are plotted alongside model predictions in

light blue.

110 Washington except for King, Snohomish, and Spokane Counties: Covariate fits and regression coefficients



Washington except for King, Snohomish, and Spokane Counties: Covariate fits and regression coefficients. A-F: Line plots showing predicted covariate time trends for A) mobility in the absence of additional mandates; B) mobility with additional mandates applied; C) diagnostic testing per capita; D) pneumonia seasonality; E) mask use per capita, and; F) mask use in a scenario where adherence increases to 95% of the population. G-H: COVID mortality data generated from

reported daily deaths (blue); estimated based on reported hospitalizations (purple); estimated from reported cases (green); and via a spline fit through all available data types (red, 95% UI in pink). **I-R**: Box plots showing 1,000 draws of fixed effect coefficients in a multivariate regression fit to $\log(\beta)$.