Online Appendices: *Health and Economic Impacts of Lockdown Policies in the Early Stage of COVID-19 in the U.S.*

APPENDIX A. Summary of Socio-Demographic Information Retrieved from Mathematica

Table A.1 Summary of other socio-demographics information[†]

State	Population[‡]	Annual Birth[‡]	Annual Death[‡]	Employment[§]
Alabama	4,849,377	57,313	53,879	2,618,073
Alaska	736,732	10,031	4,819	445,031
Arizona	6,731,484	81,942	60,523	3,520,657
Arkansas	2,966,369	36,640	31,322	1,606,087
California	38,802,500	462,617	282,520	21,245,509
Colorado	5,355,866	64,524	39,116	3,215,903
Connecticut	3,590,886	34,567	31,149	2,235,248
Delaware	935,614	10,683	9,454	548,130
Dist. of Col.	658,893	9,493	5,677	813,734
Florida	19,893,297	221,695	211,692	10,679,883
Georgia	10,097,343	127,873	86,319	5,559,982
Hawaii	1,431,603	16,878	12,748	873,157
Idaho	1,654,930	22,220	13,308	947,483
Illinois	12,859,995	144,299	110,004	7,608,799
Indiana	6,596,855	80,711	62,175	3,727,784
Iowa	3,107,126	37,672	28,809	2,034,878
Kansas	2,904,021	35,457	25,230	1,855,548
Kentucky	4,425,092	53,471	46,074	2,438,265
Louisiana	4,649,676	58,498	46,343	2,517,085
Maine	1,330,089	12,073	14,335	830,221
Maryland	5,976,407	70,091	51,453	3,437,502
Massachusetts	6,794,422	70,419	58,564	4,198,813
Michigan	9,909,877	109,472	95,983	5,454,613
Minnesota	5,489,594	67,642	43,200	3,562,386
Mississippi	2,994,079	35,978	31,536	1,568,063
Missouri	6,083,672	71,297	60,141	3,663,291
Montana	1,023,579	11,618	9,870	647,427
Nebraska	1,881,503	25,343	15,582	1,245,362
Nevada	2,839,099	35,932	25,610	1,666,531
New Hampshire	1,326,813	12,004	12,125	848,016
New Jersey	8,944,469	99,501	75,723	5,128,341
New Mexico	2,085,572	23,125	18,388	1,115,677
New York	19,746,227	222,924	164,817	11,039,874
North Carolina	10,042,802	119,203	94,312	5,460,841
North Dakota	756,927	10,536	6,250	487,337
Ohio	11,594,163	134,291	117,750	6,829,647
Oklahoma	3,878,051	48,759	40,266	2,159,540
Oregon	3,970,239	43,305	36,563	2,320,043
Pennsylvania	12,787,209	135,190	133,439	7,304,947
Rhode Island	1,056,298	10,481	9,802	615,347
South Carolina	4,896,146	56,353	50,744	2,507,978
South Dakota	858,469	11,911	7,337	564,481
Tennessee	6,549,352	80,239	67,977	3,746,010
Texas	26,956,958	378,664	202,786	14,157,309
Utah	2,942,902	48,642	17,443	1,673,907
Vermont	626,562	5,581	5,634	427,422
Virginia	8,326,289	98,403	69,729	4,936,137
Washington	7,061,530	87,950	58,587	3,948,743
West Virginia	1,844,128	17,888	22,567	921,898
Wisconsin	5,771,337	63,712	50,393	3,595,084
Wyoming	584,153	6,601	4,971	389,776

[†]Information is obtained by Mathematica, Wolfram Research, Inc. (see the codes below). Information for per capita income and median age is provided in the main body (see Table 5). [‡]This information is used to measure the initial population, $N(0)$, and vital dynamics μ and ν used in the SEIRS model. $N(0)$=Population, μ=(1/365)*(Annual Birth/Population), ν=(1/365)*(Annual Death/Population). [§]This is used to obtain the employment rate in each state (see Appendix C.4).

Sample of Mathematica codes to retrieve demographic and cost information (shown for the state of Michigan)
Per capita income: `AdministrativeDivisionData[Entity["AdministrativeDivision","Michigan","UnitedStates"],"PerCapitaIncome"]`
Population: `AdministrativeDivisionData[Entity["AdministrativeDivision","Michigan","UnitedStates"],"Population"]`
Birth: `AdministrativeDivisionData[Entity["AdministrativeDivision","Michigan","UnitedStates"],"AnnualBirths"]`
Death: `AdministrativeDivisionData[Entity["AdministrativeDivision","Michigan","UnitedStates"],"AnnualDeaths"]`
Median age: `AdministrativeDivisionData[Entity["AdministrativeDivision","Michigan","UnitedStates"],"MedianAge"]`
Employment: `AdministrativeDivisionData[Entity["AdministrativeDivision","Michigan","UnitedStates"],"PerCapitaIncome"]`

APPENDIX B. Model Validation

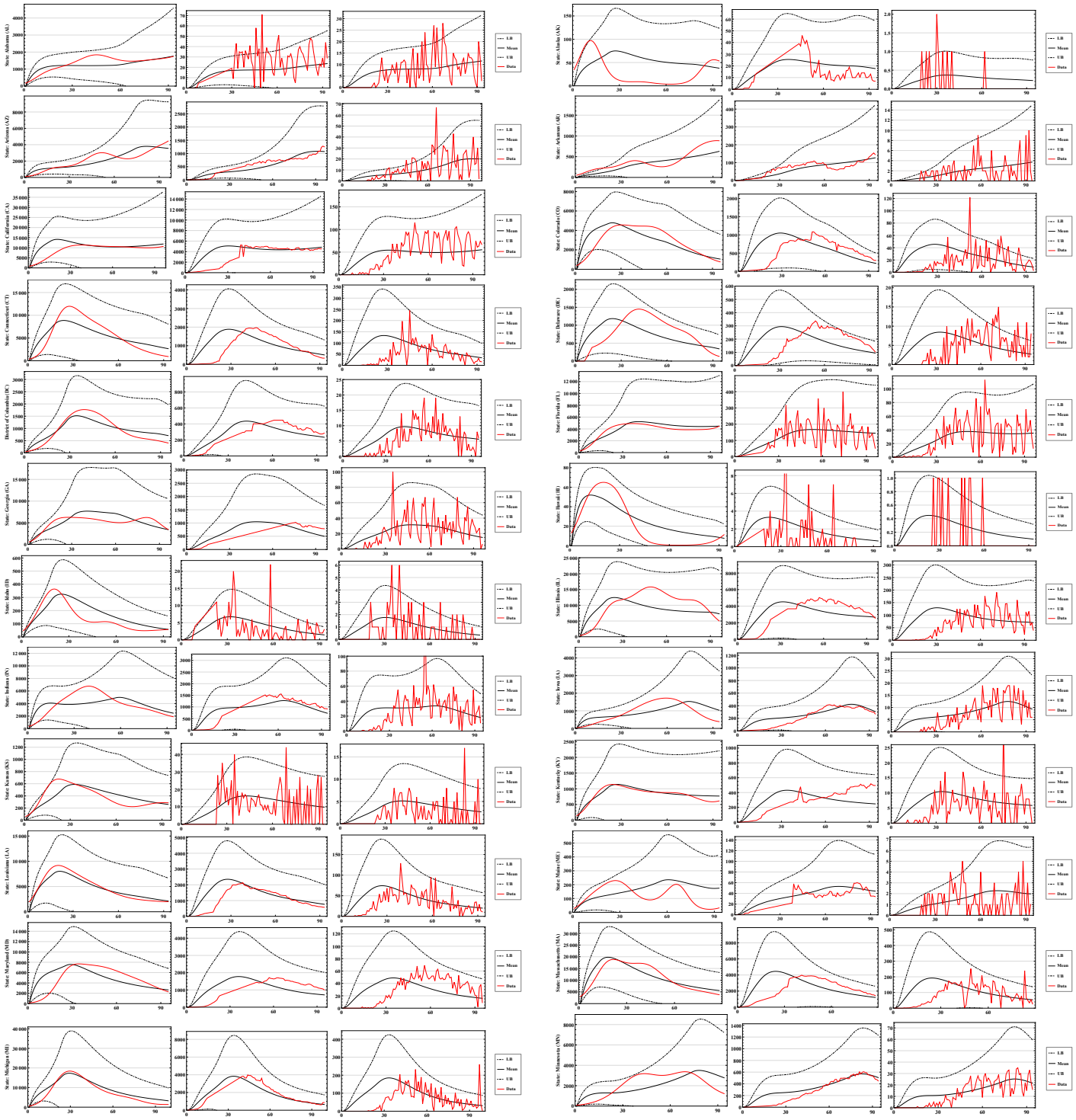

Figure B.1 (Color online) SEIRS model validation: comparison of our predictions with the data

Notes. For each state, columns from left to right represent results for the total number of projected infections, hospitalizations, and deaths, respectively. For projected infections, benchmark data comes from IHME (2020). For hospitalizations and deaths, benchmark data comes from Foldi and Csefalvay (2020). LB/UB: Lower/upper bounds represent 90% CIs for each outcome. x-axis represents time (days). For each state, day 0 is different (see Table 2, column "Data").

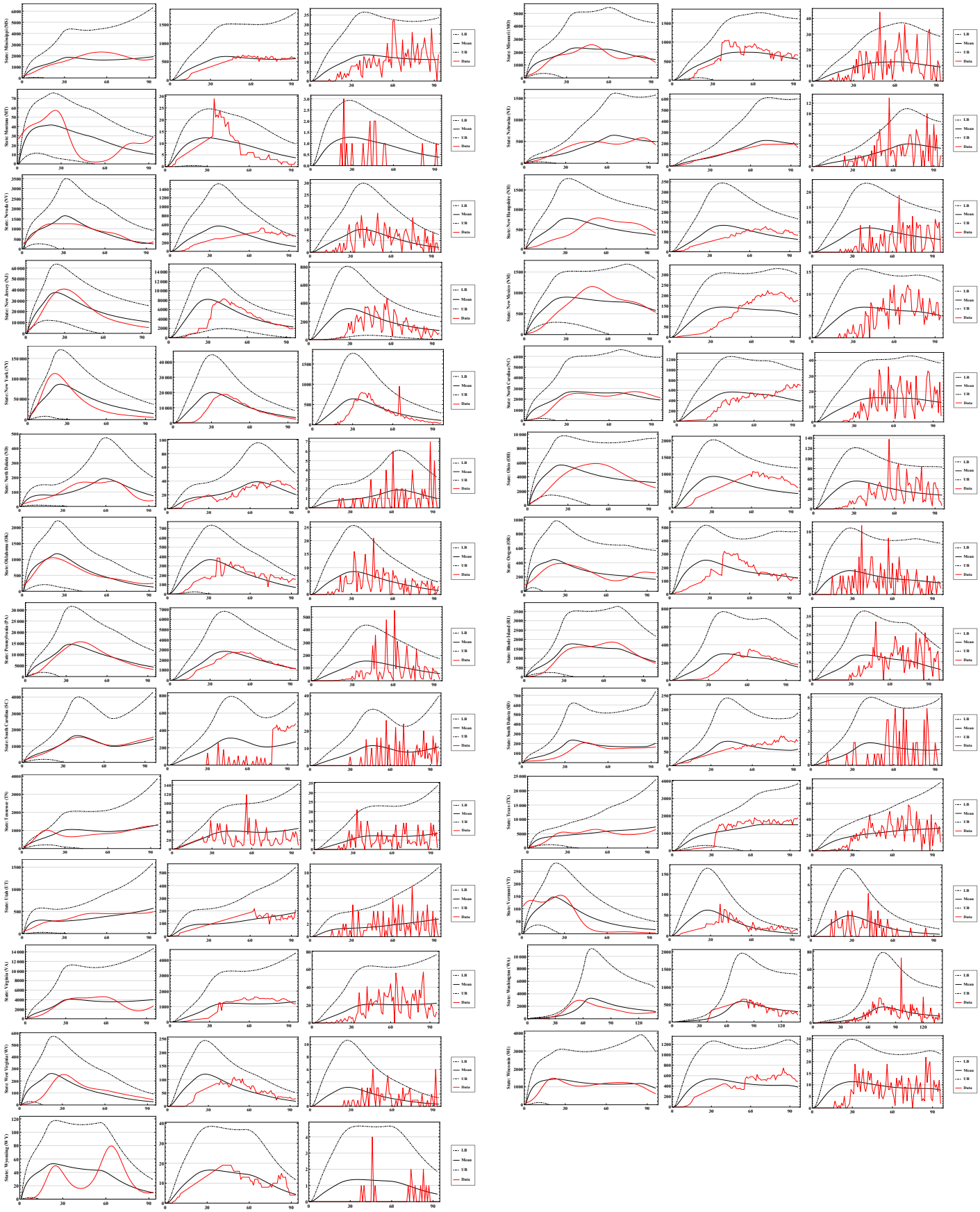

Figure B.1 Continued

APPENDIX C. Parameter Estimations

C.1. Quality-of-life scores. We characterize qol scores as follows:

$$q_i = \begin{cases} 1.0, & \text{if } i \in \{1,11\} \text{ Compartment(s): susceptible, recovered,} \\ x \in [0.8,1.0], & \text{if } i = 2 \text{ Compartment(s): exposed/presymptomatic,} \\ x \in [0.7,0.9], & \text{if } i = 3 \text{ Compartment(s): infected asymptomatic,} \\ x \in [0.6,0.8], & \text{if } i = 4 \text{ Compartment(s): infected symptomatic,} \\ x \in [0.5,0.7], & \text{if } i = 5 \text{ Compartment(s): infected hospitalized (common bed),} \\ x \in [0.3,0.5], & \text{if } i = 6 \text{ Compartment(s): infected hospitalized (ICU bed),} \\ x \in [0.1,0.3], & \text{if } i = 7 \text{ Compartment(s): infected hospitalized (ICU bed \& ventilator),} \\ x \in [0.7,0.9], & \text{if } i = 8 \text{ Compartment(s): carrier post discharge (was hospitalized common bed),} \\ x \in [0.6,0.8], & \text{if } i = 9 \text{ Compartment(s): carrier post discharge (was hospitalized ICU bed),} \\ x \in [0.5,0.7], & \text{if } i = 10 \text{ Compartment(s): carrier post discharge (was hospitalized ICU bed \& ventilator),} \\ 0.0, & \text{if } i = 12 \text{ Compartment(s): dead,} \end{cases} \tag{EC.1}$$

where we note the following points: **(a)** Since we measure QALY per single day, we divide each qol score by 365 to account for the daily counterpart. **(b)** The range for infected patients hospitalized with common beds is consistent with the value of 0.6 reported in the medical literature (Liu et al. 2020). **(c)** When qol scores are not reported by the literature, we set up the ranges such that the qol scores would properly reflect on their relative severity. For example, the average qol score for an infected hospitalized patient (in a common bed) is 0.6, whereas its counterpart for an infected hospitalized patient (with an ICU bed) is 0.4. **(d)** For cases that are still carriers of the disease post hospital discharge, we assume that their health will be improved compared to when they were hospitalized. Of note, this improvement is more noticeable for patients who had been hospitalized with an ICU bed and a ventilator. **(e)** These ranges allow us to account for variations in qol scores for different compartments. Moreover, in our robustness checks, we will consider two alternative scenarios for qol scores where they are selected from either higher or lower ranges (see Appendix E.1).

Furthermore, regarding the terminal qol score, we calculate it by: $Q_i = \big(q_i/r\big)\big(1 - e^{-r*RLE}\big)$, where q_i is the qol score, $r = 0.03$ is a discount rate (it measures the deterioration of a patient's health status over the remaining lifetime), and RLE is the residual life expectancy (Sassi 2006). RLE typically depends on age and gender. Following Arias et al. (2021), we take the average of RLE values across genders, and adjust it based on the randomly selected age. We also note that since we aim to conduct robustness checks on the qol score q_i, we do not perform robustness checks on the terminal qol score Q_i, because it is a function of q_i.

C.2. Direct cost (utilization of existing resources). We take a back-of-the-envelope calculation to estimate the operating costs of hospital resources per day: **(a)** We obtain the costs of using an ICU bed or an ICU bed with a ventilator per day (Dasta et al. 2005). We then use the U.S. healthcare inflation rate to prorate the corresponding values from 2005 to 2020 (YCHARTS 2020). **(b)** To measure the operating cost of a common non-ICU bed, we use the average ratio of cost of an ICU bed to that of a non-ICU bed reported to be 5.85 (Norris et al. 1995). **(c)** The costs obtained via the previous two steps are used for the state of Washington that is reported to have the highest inpatient expenses per day (KFF 2018a). For other states, we adjust costs based on the ratio of inpatient expenses in each state compared to that in the state of Washington KFF (2018a). Estimated values are reported in Table C.1.

C.3. Direct cost (expansion of resources). **(a)** Beds: We resort to CDC (2020) to obtain the number of inpatient and ICU beds across the U.S. To measure the number of common beds, we subtract the number of ICU beds from inpatient beds. Furthermore, as reported by Modern Healthcare (2015), the cost of adding one more hospital bed is reported to be between \$5K and \$10K for common beds and \$25K and \$30K for ICU beds. Of note, we incur this cost if the number of patients requiring, say, common beds is more than the existing capacity of these equipments in a state. **(b)** Ventilators: There are the total of ∼160,000 ventilators in the U.S. (AHA 2022). To determine the distribution of these ventilators across U.S. states, we resort to the numbers reported by Rubinson et al. (2010). If the number of patients requiring ventilators is more than the existing number of these equipments in a state, then we incur the cost of capacity expansion by adding one more ventilator per patient, which could cost between \$5K and \$50K (Medtronic 2019). Estimated values are reported in Table C.1.

Table C.1 Information of hospital resources across U.S. states

State	Cost of resources utilization ($/day)			Existing capacity of resources		
	Common bed†	ICU bed†	ICU bed & ventilator†	Inpatient bed‡	ICU bed‡	Ventilator†
Alabama	470.29	2,751.20	3,892.49	(7992,19393)	(899,2697)	2,360
Alaska	668.88	3,912.98	5,536.21	(0,1448)	(0,133)	267
Arizona	818.44	4,787.87	6,774.04	(10815,18677)	(1571,2899)	3,358
Arkansas	572.63	3,349.91	4,739.56	(5915,12027)	(519,1644)	1,624
California	1,075.82	6,293.55	8,904.33	(70233,84479)	(11406,14265)	16,899
Colorado	927.48	5,425.78	7,676.58	(4946,14736)	(384,2404)	2,342
Connecticut	863.82	5,053.37	7,149.68	(2925,13038)	(632,2219)	1,765
Delaware	925.35	5,413.31	7,658.93	(102,4603)	(0,571)	513
Dist. of Col.	1,057.85	6,188.42	8,755.59	(1981,3561)§	(301,496)§	459
Florida	674.06	3,943.27	5,579.07	(56037,71291)	(8638,11747)	11,046
Georgia	561.97	3,287.54	4,651.32	(16436,28099)	(2110,4155)	5,368
Hawaii	805.34	4,711.25	6,665.64	(0,5430)	(0,1620)	619
Idaho	972.25	5,687.72	8,047.17	(2485,5307)	(244,750)	467
Illinois	802.90	4,697.00	6,645.47	(20134,41662)	(2978,8426)	5,927
Indiana	789.19	4,616.81	6,532.02	(14423,22010)	(1968,3362)	3,776
Iowa	487.04	2,849.20	4,031.15	(5037,10994)	(456,1443)	1,391
Kansas	586.34	3,430.09	4,853.01	(6357,11871)	(681,1845)	1,319
Kentucky	595.78	3,485.33	4,931.16	(5096,18954)	(455,2269)	2,434
Louisiana	618.32	3,617.19	5,117.72	(9879,17222)	(1530,3252)	2,845
Maine	802.90	4,697.00	6,645.47	(1041,5451)	(14,830)	549
Maryland	857.42	5,015.95	7,096.74	(0,6839)	(0,2541)	2,445
Massachusetts	925.35	5,413.31	7,658.93	(6146,20436)	(308,2139)	3,611
Michigan	731.02	4,276.48	6,050.50	(17118,29640)	(2120,4562)	4,737
Minnesota	724.62	4,239.06	5,997.56	(8452,17034)	(1017,2462)	2,080
Mississippi	417.59	2,442.94	3,456.35	(4282,11634)	(618,1619)	1,973
Missouri	719.14	4,206.98	5,952.18	(17286,27443)	(2154,4216)	3,686
Montana	485.52	2,840.29	4,018.54	(810,2745)	(27,194)	406
Nebraska	631.42	3,693.81	5,226.12	(3095,6860)	(469,1283)	1,196
Nevada	606.44	3,547.69	5,019.40	(4254,10602)	(407,1650)	1,932
New Hampshire	798.94	4,673.83	6,612.70	(1389,4339)	(93,529)	531
New Jersey	848.59	4,964.28	7,023.63	(5259,27911)	(114,6119)	3,814
New Mexico	865.65	5,064.06	7,164.81	(1510,3988)	(204,715)	939
New York	876.31	5,126.43	7,253.04	(33715,60371)	(5430,10309)	11,557
North Carolina	680.46	3,980.69	5,632.01	(10109,32137)	(483,4455)	4,571
North Dakota	560.14	3,276.85	4,636.20	(331,3419)	(0,674)	462
Ohio	861.69	5,040.90	7,132.03	(21209,49023)	(5284,10346)	6,999
Oklahoma	600.35	3,512.06	4,968.98	(8492,16314)	(778,2537)	1,898
Oregon	1,046.88	6,124.27	8,664.83	(2007,11481)	(112,1954)	1,290
Pennsylvania	769.09	4,499.21	6,365.63	(22996,52907)	(1961,7176)	7,728
Rhode Island	855.60	5,005.26	7,081.61	(421,1732)	(32,104)	503
South Carolina	626.85	3,667.08	5,188.31	(7837,14336)	(929,2208)	2,434
South Dakota	469.98	2,749.42	3,889.97	(97,2751)	(0,359)	383
Tennessee	653.96	3,825.66	5,412.68	(13884,24086)	(1541,3457)	3,891
Texas	793.15	4,639.98	6,564.80	(58762,75847)	(8934,12176)	13,898
Utah	893.97	5,229.78	7,399.26	(2966,7174)	(404,1455)	1,290
Vermont	801.99	4,691.65	6,637.91	(0,1984)	(0,220)	231
Virginia	633.85	3,708.06	5,246.29	(10583,23988)	(990,3093)	3,422
Washington	1,081.91	6,329.19	8,954.75	(8197,16632)	(634,3036)	2,145
West Virginia	552.22	3,230.52	4,570.65	(3867,8269)	(502,1097)	1,411
Wisconsin	770.01	4,504.56	6,373.20	(7735,16310)	(910,2050)	2,216
Wyoming	436.48	2,553.41	3,612.65	(328,1608)	(0,139)	301

†To account for potential variations in our simulation, we consider a ±10% variation based on these point estimates.
‡These are 95% confidence intervals (CIs) obtained from data reported in CDC (2020). We use these intervals in our simulation. Also, to count the number of common beds, we subtract the number of ICU beds from inpatient beds.
§CIs were not reported by CDC (2020). Instead, we take 20% of the average of CIs across other states. This is also consistent with the values reported by DC.gov (2022).

C.4. Indirect cost (lost income and productivity). Following notations in the main body, we let $p_j(t)$, $j=1,\ldots,4$, represent the proportion of working population who have lost less than 25%, between 25% and 50%, between 50% and 75%, and more than 75% of their income, respectively. According to Statista (2020), we have $p_1(t)=48\%,\ p_2(t)=20\%,\ p_3(t)=14\%,\ p_4(t)=18\%$. However, the results reported in Statista (2020) do not account for the number and intensity of societal intervention policies. Indeed, to the best of our knowledge, there is no data reporting on this specific information. To accommodate this, we take the following steps to adjust our estimations: **(a)** When all three interventions are in place (including stay-at-home order and non-essential business closures, large-gathering ban, and school closures), we resort to the survey in in Statista (2020) and let $p_1(t)=48\%,\ p_2(t)=20\%,\ p_3(t)=14\%,\ p_4(t)=18\%$. This is a reasonable assumption, because the foregoing survey was conducted in May 2020, when most states had undergone these three interventions (see Table 2 in the main body). **(b)** Recall that, when we transition between our counterfactual policies, we relax one intervention at a time (see Table 4 in the main body). When this happens, we drop the corresponding p_j's for $j=2,3,4$ by 5% and add them to quantile 1. Based on this premise, we have (for description of Policies 1/2/3, see Table 4 in the main body):

$$(p_1(t),p_2(t),p_3(t),p_4(t))=\begin{cases}(48\%,20\%,14\%,18\%), & \text{under Policy 1: if } 1\le t\le 61,\\ (63\%,15\%,9\%,13\%), & \text{under Policy 1: if } 62\le t\le 92,\\ (78\%,10\%,4\%,8\%), & \text{under Policy 1: if } 93\le t\le 122,\\ (48\%,20\%,14\%,18\%), & \text{under Policy 2: if } 1\le t\le 92,\\ (63\%,15\%,9\%,13\%), & \text{under Policy 2: if } 93\le t\le 122,\\ (48\%,20\%,14\%,18\%), & \text{under Policy 3: if } 1\le t\le 122.\end{cases} \tag{EC.2}$$

(c) Despite these adjustments, the resulting values may not be exactly representive of reality. We account for this via two routes. First, in our simulation, we consider a $\pm 10\%$ variation based on the point estimates reported for p_j's in Equation (EC.2). Then, in our robustness checks, we consider two alternative scenarios for p_j's (see Appendix E.2).

Finally, we obtain the employment rate η by the ratio Employment/Population, where the latter two measures were already introduced in Table A.1.

C.5. Indirect cost (quarantine). Based on the numbers reported by CDC (2021) and Bourdeaux et al. (2021), we make use of the following estimates.

q_H	probability of a quarantining person doing that at home, $q_H\in[0.80,0.99]$
q_F	probability of a quarantining person doing that at a facility (e.g., hotel), $q_F=1-q_H$
c_H	cost (\$/day) for quarantining at home, $c_H\in[30,70]$
c_F	cost (\$/day) for quarantining at a facility, $c_F\in[80,300]$
d_A	# days of quarantine if asymptomatic, $d_A=5$
d_S	# days of quarantine if symptomatic, $d_S=10$
$I_A^N(t)$	# new asymptomatic infections on day t (obtained from our estimation)
$I_S^N(t)$	# new symptomatic infections on day t (obtained from our estimation)
γ	% of people who do quarantine when infected (set exogenously, subject to sensitivity analysis)

C.6. Scale reduction (shrinkage) factor for the MCMC simulation. For the convergence of the Metropolis Hastings algorithm, we use the scale reduction factor over 2,000 iterations. As noted by, Brooks and Gelman (1998), when the value of this factor <1.2, that is a good indication for the convergence of the algorithm. Figure C.1 shows the plots of this factor.

C.7. Confidence intervals of predicted transmission rates against covariates with high P values. See Figure C.2.

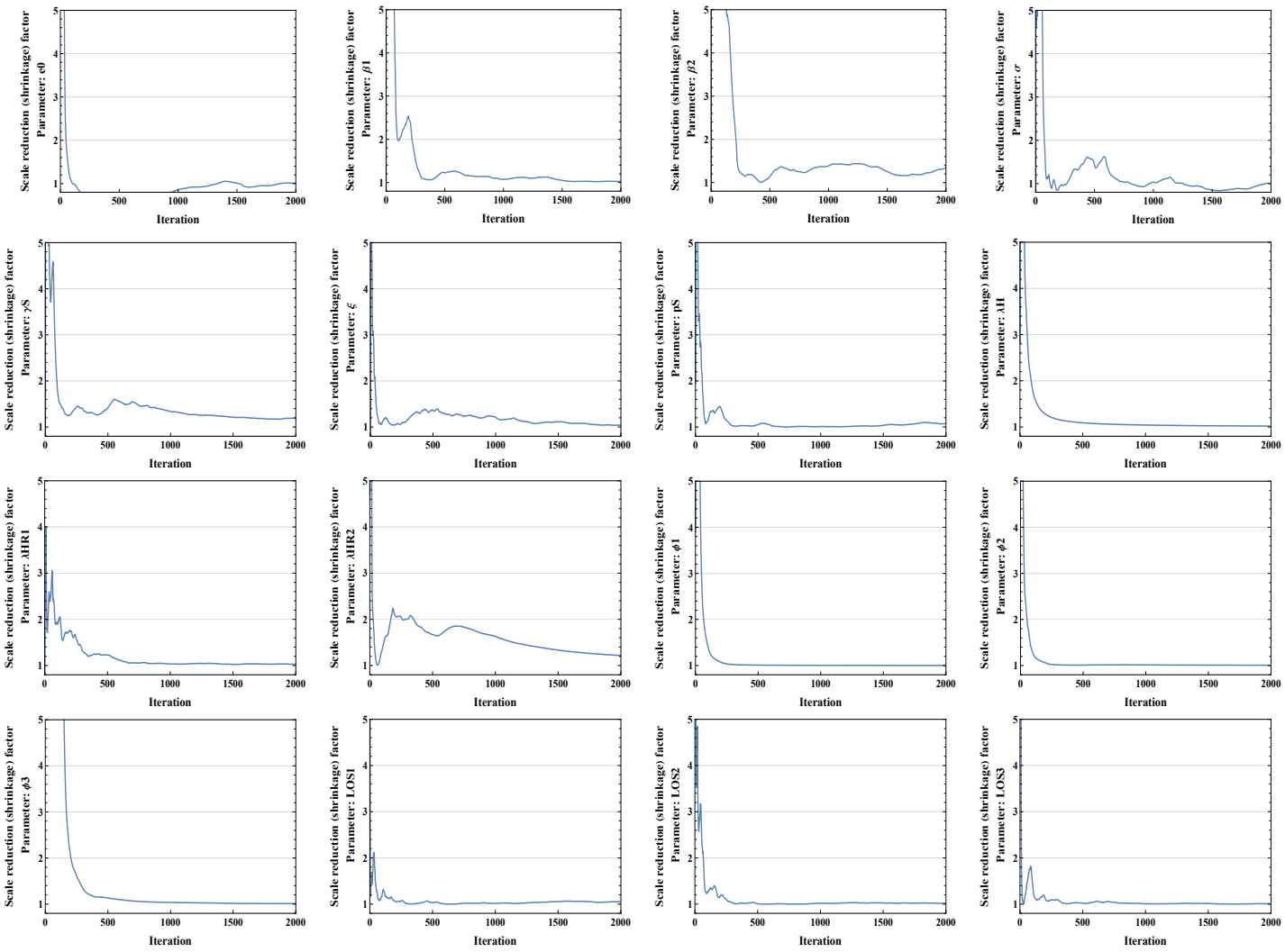

Figure C.1 Scale reduction factor (results are shown for the state of California)
Notes. See Table 3 (in the main body) for the description of notations.

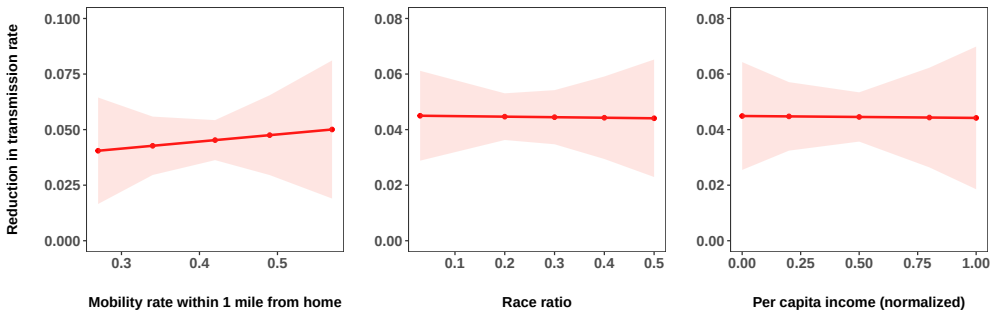

Figure C.2 Confidence intervals of predicted transmission rates against covariates with high P-values

APPENDIX D. Comparison of Intervention Policies

D.1. Micro-simulation model. See Table D.1 for the summary of this model.

D.2. Further consideration for high-risk population. Older people and minority races typically have lower qol scores compared to the average population. As reported by the literature, a person aging one year older could drop his/her qol score about 0.00343 per year compared to the same person one year younger. Similarly, a person with a minority race could drop the qol score about 0.01 per year compared to White people (see, e.g., Dyrbye et al. (2007), Grassi et al. (2020)). To address this in our analysis, we take the following steps: **(a)** We consider the ranges [0.001,0.005] and [0.005,0.2] for the drops in the qol score for each extra year a person ages and for Black/Hispanic races, respectively. **(b)** In our simulation, we generate random values from these two ranges and subtract their average from the qol scores that we already set in Equation (EC.1).

Of note, the high-risk population is also impacted from the economic standpoint. Indeed, compared to White people, Black/Hispanic populations are reported to be, on average, 15% more exposed to financial repercussions caused by COVID-19 (see, e.g., Saenz and Sparks (2020)). Thus, when accounting for the proportion of lost income in our simulation, we consider an increase in this proportion across all quantiles of lost income (see Equation (EC.2)). This increase is from the range [2%,5%], which is also consistent with the findings in the literature (see, e.g., Parker et al. (2020)).

Table D.1 Summary of the micro-simulation model

Input: estimated parameters for each state and type/duration of conterfactual policies 1-3[†]

for each state
  for iteration k=1 to 10,000
    randomly select the probability of a quarantining person doing that at home, the cost for quarantining at home, and the cost for quarantining at a facility from the corresponding ranges (see Appendix C.5)
    for each parameter in the SEIRS model[††]
      randomly select a value from the corresponding confidence interval (see Table 7)
    for each compartment in the SEIRS model
      randomly select a qol score from the corresponding range (see Equation (EC.1))
    for each hospital resource
      randomly select an operation cost and an existing capacity from the corresponding ranges (see Table C.1)
    for each quantile j of population losing their income[c]
      randomly select a ratio of lost income per day, $\theta_j \in [(j-1)*0.25, j*0.25]$
      randomly select a proportion of population from the corresponding range (see Equation (EC.2))
    for the current policy[‡]
      run the SEIRS model to obtain # people in each compartment over the time horizon (see Equations (1a)-(1h))
      obtain the total QALY and cost (see Equations (2)-(5b))
    for each potential policy
      predict transmission rates β_1-β_3 (see Equation (8))
      run the SEIRS model to obtain # people in each compartment over the time horizon (see Equations (1a)-(1h))
      obtain the total QALY and cost (see Equations (2)-(5b))
    for the hypothetical no-intervention policy
      predict the transmission rate under no-intervention $\hat{\beta}_0$ (see Equation (9))
      run the SEIRS model to obtain # people in each compartment over the time horizon (see Equations (1a)-(1h))
      obtain the total QALY and cost (see Equations (2)-(5b))

Output 1: total QALY saved = total QALY (intervention policies) − total QALY (no-intervention)[§]

Output 2: total extra cost = total cost (intervention policies) − total cost (no-intervention)[§]

Output 3: ICER = $\frac{\text{Total cost (potential policy)} - \text{Total cost (current policy)}}{\text{Total QALY (potential policy)} - \text{Total QALY (current policy)}}$ [¶]

[†]The parameters that are not listed in this table are set based on the values mentioned throughout the paper. [††]Except these parameters: $N(0)$, μ, and ν. [‡]The estimated transmission rates under the current policy in each state are among the inputs (see Table 7 for these estimations). [§]By intervention policies, we refer to our proposed (potential) policies and the current policies. [¶]A potential policy is said to be more cost-effective than the current policy if ICER≤WTP. Since, in our simulation, we run 10,000 iterations under each policy, there will be $10^4 \times 10^4 = 10^8$ comparisons of ICER with WTP. To this end, the cost-effectiveness (CE) probability of a potential policy compared to the current policy is measured as the percentage of these 10^8 comparisons where ICER $\leq$ WTP.

D.3. Increase in QALY and cost. Results are presented per 100K capita and 100K high-risk capita.

Table D.2 Avg (std dev) of outcomes compared to no-intervention per 100K capita Outcomes: QALY gained (1,000 years) and extra cost ($ million)

State	Outcome	Policies			
		Current	P1	P2	P3
Alabama	QALY	0.19 (0.02)	0.2 (0.02)	0.21 (0)	0.22 (0.03)
	Cost	-8.36 (1.32)	-69.24 (0.84)	-92.08 (0.24)	-100.84 (1.16)
Alaska	QALY	15.45 (3.68)	16.31 (1.68)	16.07 (2.11)	16.65 (2.74)
	Cost	51.37 (20.59)	31.32 (24.49)	11.37 (41.21)	3.15 (34.62)
Arizona	QALY	0.6 (0.04)	1.29 (0.04)	1.41 (0.03)	1.44 (0.08)
	Cost	-44.52 (1.4)	-68 (0.52)	-91.39 (0.72)	-99.11 (1.23)
Arkansas	QALY	26.25 (4.25)	25.75 (1.41)	27.5 (2.19)	27.86 (4.68)
	Cost	-41.74 (0.89)	-61.57 (0.89)	-83.66 (2.33)	-94.56 (2.99)
California	QALY	26.53 (3.51)	26.1 (3.76)	26.48 (3.59)	26.71 (2.95)
	Cost	192.39 (38.96)	197.9 (17.52)	176.85 (9.9)	167.97 (53.27)
Colorado	QALY	11.56 (1.18)	11.64 (1.69)	11.66 (0.28)	11.95 (0.43)
	Cost	0.99 (7.13)	-36.82 (14.39)	-73.64 (12.58)	-86.08 (1.87)
Connecticut	QALY	132.89 (2.25)	133.8 (2.42)	140.19 (6.83)	145.04 (2.09)
	Cost	974.64 (232.77)	966.86 (134.93)	1011.42 (174.61)	994.48 (129.58)
Delaware	QALY	59.53 (2.33)	61.71 (2.02)	61.97 (0.7)	60.18 (1.29)
	Cost	313.52 (58.33)	296.42 (57.48)	282.41 (61.13)	272.54 (75.97)
District of Columbia	QALY	107.48 (3.16)	122.52 (5.96)	139.44 (5.21)	151.52 (8.92)
	Cost	508.67 (44.32)	491.12 (42.25)	480.36 (159.18)	454.65 (99.68)
Florida	QALY	12.07 (1.75)	12.21 (0.62)	12.44 (2.41)	12.33 (1.56)
	Cost	-27.03 (0.76)	-72.89 (1.57)	-97.07 (1.38)	-106.43 (0.44)
Georgia	QALY	36.07 (2.78)	37.41 (4.21)	38.29 (1.1)	38.89 (2.28)
	Cost	20.91 (9.11)	-15.66 (11.25)	-36.03 (15.08)	-43.86 (2.76)
Hawaii	QALY	0.02 (0)	0.02 (0)	0.02 (0)	0.02 (0)
	Cost	-83.16 (2.33)	-101.28 (1.16)	-133.71 (2.51)	-148.05 (2.32)
Idaho	QALY	59.79 (1.14)	59.7 (3.88)	59.92 (4.04)	61.58 (3.95)
	Cost	-46.61 (1.2)	-70.1 (0.46)	-91.52 (1.77)	-102.36 (1.6)
Illinois	QALY	94.23 (6.98)	96.47 (5.93)	104.4 (3.8)	110.76 (1.14)
	Cost	378.69 (78.33)	386.05 (96.44)	394.93 (104.58)	400.24 (217.99)
Indiana	QALY	0.68 (0.04)	0.69 (0.02)	0.69 (0.04)	0.69 (0.04)
	Cost	-51.3 (0.8)	-74.38 (1.34)	-100.01 (0.86)	-107.9 (1.02)
Iowa	QALY	0.59 (0.05)	0.75 (0.01)	0.77 (0.05)	0.79 (0.05)
	Cost	-93.7 (1.61)	-100.77 (1.85)	-126.96 (0.59)	-138.64 (1.01)
Kansas	QALY	33.84 (2.54)	34.26 (4.47)	35.6 (5.38)	36.01 (3.46)
	Cost	-48.61 (2)	-93.61 (0.94)	-123.82 (1.13)	-137.12 (2.75)
Kentucky	QALY	53.61 (0.89)	51.14 (2.35)	53.95 (1.15)	56.56 (4.37)
	Cost	174.66 (82.29)	163.68 (95.05)	160.03 (51.37)	157 (19.73)
Louisiana	QALY	74.03 (1.13)	75.38 (6.03)	79.85 (6.09)	83.64 (3.95)
	Cost	313.66 (109.42)	327.13 (167.4)	334.9 (102.66)	351.43 (183.69)
Maine	QALY	2.8 (0.27)	3.62 (0.33)	3.63 (0.15)	3.75 (0.45)
	Cost	-38.5 (1.6)	-83.18 (2.36)	-110.83 (2.08)	-123.23 (3.41)
Maryland	QALY	29.48 (0.98)	30.21 (0.59)	30.71 (1.47)	31.03 (0.64)
	Cost	-30.33 (12.79)	-68.63 (19.44)	-97.44 (19.51)	-110.45 (13.61)
Massachusetts	QALY	98.47 (3.68)	96.64 (3.56)	99.17 (2.09)	100.97 (4.8)
	Cost	4.34 (12.21)	-6.4 (8.99)	-43.59 (17)	-59.01 (8.52)
Michigan	QALY	97.15 (4.41)	102 (5.2)	105.44 (5.71)	108.23 (9.59)
	Cost	344.57 (48.72)	349.17 (54.16)	337.33 (57.16)	334.15 (65.37)
Minnesota	QALY	0.52 (0.04)	0.59 (0.01)	0.61 (0.01)	0.6 (0.03)
	Cost	-76.83 (1.88)	-109.26 (2.4)	-144.91 (1.51)	-160.1 (0.57)

Table D.2 Continued

State	Outcome	Policies			
		Current	P1	P2	P3
Mississippi	QALY	29.79 (3.63)	30.57 (4.5)	31.26 (2.33)	31.45 (4.97)
	Cost	163.09 (69.1)	144.69 (42.15)	134.34 (65.82)	133.26 (29.02)
Missouri	QALY	16.03 (0.94)	16.36 (2.06)	16.83 (0.63)	17.29 (0.88)
	Cost	61.33 (27.51)	33.18 (18.66)	17.09 (29.86)	11.12 (20.16)
Montana	QALY	0.5 (0.02)	0.51 (0.07)	0.53 (0.07)	0.52 (0.11)
	Cost	-19.84 (0.75)	-88.61 (0.53)	-117.37 (1.83)	-128.61 (0.72)
Nebraska	QALY	14.28 (0.37)	17 (1.13)	17.68 (1.32)	17.92 (1.2)
	Cost	28.8 (5.98)	-55.63 (9.05)	-84.17 (6.45)	-97.98 (4.57)
Nevada	QALY	45.68 (2.35)	46.55 (2.06)	46.12 (5.35)	47.21 (5.97)
	Cost	94.27 (81.1)	70.21 (95.58)	53.3 (61.62)	45.94 (68.45)
New Hampshire	QALY	75.68 (5.32)	75.77 (2.36)	78.39 (5.43)	78.01 (8.46)
	Cost	219.77 (21.69)	197.76 (27.55)	184.83 (47.72)	176.57 (58.16)
New Jersey	QALY	175.73 (5.4)	167.72 (3.28)	180.14 (6.08)	183.95 (5.77)
	Cost	2398.22 (103.81)	2356.04 (204.71)	2432.49 (259.37)	2448.89 (114.21)
New Mexico	QALY	40.32 (2.61)	43 (4.72)	44.11 (5.56)	43.21 (1.54)
	Cost	19.1 (4.16)	9.91 (19.46)	-6.44 (5.01)	-15.83 (16.41)
New York	QALY	132.22 (0.82)	138.6 (5.84)	139.57 (7.46)	145.51 (2.42)
	Cost	1169.6 (234.66)	1220.65 (34.73)	1251.44 (99.75)	1292.53 (133.89)
North Carolina	QALY	19.5 (2.39)	19.55 (1.93)	19.89 (2.8)	19.69 (2.25)
	Cost	-1.01 (3.68)	-35.01 (8.67)	-61.55 (13.97)	-70.22 (11.87)
North Dakota	QALY	0.04 (0)	0.04 (0)	0.05 (0)	0.05 (0)
	Cost	-70.76 (2.55)	-113.12 (1.01)	-148.54 (0.83)	-163.98 (3.45)
Ohio	QALY	21.19 (2.59)	20.82 (1.13)	20.91 (1.54)	21.11 (2.43)
	Cost	-62.2 (3.14)	-76.32 (1.66)	-101.93 (1.98)	-111.59 (2.05)
Oklahoma	QALY	23.31 (0.56)	23.8 (1.6)	23.91 (4.24)	24.75 (1.6)
	Cost	145.32 (58.73)	131.39 (75.83)	114.62 (28.57)	107.29 (66.5)
Oregon	QALY	8.45 (1.58)	8.48 (1.79)	8.42 (1.29)	8.5 (0.29)
	Cost	38.51 (9.24)	22.88 (26.2)	7.37 (17.41)	0.78 (21.8)
Pennsylvania	QALY	73.16 (4.1)	75.71 (3.52)	76.98 (2.51)	78.02 (7.78)
	Cost	21 (5.41)	-12.94 (40.24)	-35.49 (9.62)	-43.48 (33.62)
Rhode Island	QALY	137.68 (8.02)	144.85 (5.92)	151.89 (1.63)	151.28 (3.75)
	Cost	833.38 (104.44)	866.35 (65.79)	873.38 (143.92)	890.77 (110.9)
South Carolina	QALY	22.87 (3.49)	23.65 (0.91)	23.88 (0.78)	24.52 (2.81)
	Cost	-16.17 (3.68)	-65.39 (0.88)	-84.55 (5.09)	-95.05 (1.27)
South Dakota	QALY	62.58 (4.61)	66.53 (3.54)	69.47 (5.08)	69.13 (3.36)
	Cost	170.95 (54.61)	117.96 (78.03)	96.59 (20.73)	88.58 (21.69)
Tennessee	QALY	17.33 (3.43)	17.43 (1.46)	17.64 (0.4)	17.49 (3.17)
	Cost	-38.75 (1.68)	-75.61 (0.63)	-102.44 (0.5)	-112.01 (0.96)
Texas	QALY	1.4 (0.03)	1.42 (0.09)	1.46 (0.07)	1.46 (0.22)
	Cost	-28.99 (1.03)	-75.32 (0.37)	-100.33 (0.86)	-108.87 (1.01)
Utah	QALY	0.09 (0)	0.1 (0.01)	0.11 (0.01)	0.12 (0.01)
	Cost	-45.66 (0.7)	-75.48 (1.18)	-99.15 (0.33)	-107.34 (1.16)
Vermont	QALY	68.07 (6.06)	68.86 (3.43)	70.47 (2.67)	70.51 (6.99)
	Cost	102.68 (47.39)	111.05 (57.21)	84.13 (32.68)	76.12 (22.53)
Virginia	QALY	71.41 (8.4)	69.77 (7.65)	74.08 (1.7)	75.91 (3.77)
	Cost	395.07 (58.72)	405.52 (146.37)	394.06 (146.74)	388.08 (134.75)
Washington	QALY	15.16 (1.11)	15.71 (2.13)	15.56 (1.65)	15.8 (1.49)
	Cost	-71.69 (0.46)	-98.45 (1.8)	-125.18 (0.82)	-141.53 (3.28)
West Virginia	QALY	40.36 (2.26)	39.38 (3.87)	39.8 (2.56)	40.45 (2.03)
	Cost	274.85 (109.7)	262.77 (34.83)	243.79 (68.19)	253.43 (78.85)
Wisconsin	QALY	4.6 (0.91)	4.67 (0.92)	4.6 (0.25)	4.75 (0.23)
	Cost	-36.08 (6.91)	-60.39 (2.74)	-90.35 (4.25)	-102.72 (5.84)
Wyoming	QALY	14.25 (2.2)	13.82 (1.13)	13.99 (0.8)	14.35 (2.03)
	Cost	-67.76 (2.57)	-102.26 (2.93)	-136.16 (3.21)	-150.56 (3.54)

Table D.3 Avg (std dev) of outcomes compared to no-intervention per 100K high-risk capita
Outcomes: QALY gained (1,000 years) and extra cost ($ million)
High risk: age≥65 and Black/Hispanic race

State	Outcome	Policies			
		Current	P1	P2	P3
Alabama	QALY	0.36 (0.05)	0.39 (0.05)	0.41 (0.06)	0.41 (0.07)
	Cost	-31.86 (0.56)	-88.9 (0.68)	-106.66 (1.7)	-113.7 (2.01)
Alaska	QALY	22.3 (2.56)	22.77 (5.2)	23.18 (1.55)	23.49 (4.75)
	Cost	-85.16 (1.11)	-121.71 (2.95)	-149.04 (2.82)	-160.25 (0.72)
Arizona	QALY	1.04 (0.01)	2.25 (0.12)	2.41 (0.08)	2.49 (0.09)
	Cost	-60.94 (1.1)	-77.78 (0.7)	-96.08 (1.03)	-103.16 (1.01)
Arkansas	QALY	42.31 (2.01)	42.06 (6.69)	43.39 (1.43)	44.6 (5.99)
	Cost	-52.33 (1.63)	-74.54 (1.39)	-92.2 (1.12)	-99.48 (0.68)
California	QALY	42.88 (5.46)	42.2 (1.51)	42.79 (5.7)	43.16 (1.86)
	Cost	-20.36 (2.8)	-18.6 (12.58)	-39.98 (4.2)	-47.86 (13.25)
Colorado	QALY	13.41 (1.64)	13.44 (0.75)	13.56 (1.17)	13.62 (0.58)
	Cost	-66.21 (1.33)	-103.06 (3.29)	-127.73 (1.34)	-136.11 (1.15)
Connecticut	QALY	232.6 (14.42)	239.21 (12.39)	249.44 (2.28)	259.99 (1.76)
	Cost	390.68 (51.39)	382.24 (143.73)	357.39 (160.94)	350.71 (139)
Delaware	QALY	97.75 (1.28)	98.07 (1.21)	98.58 (7.99)	98.89 (1.48)
	Cost	98.77 (5.6)	84.38 (8.16)	61.05 (14.16)	50.81 (23.84)
District of Columbia	QALY	138.91 (6.46)	157.07 (8.24)	174.33 (6.65)	193.21 (1.58)
	Cost	617.18 (43.81)	590.26 (160.55)	556.79 (172.23)	559.66 (70.51)
Florida	QALY	22.65 (3.2)	23.07 (1.28)	23.28 (2.56)	23.42 (5.24)
	Cost	-51.14 (0.68)	-97.82 (1.07)	-117.43 (2.16)	-125.13 (1.79)
Georgia	QALY	54.57 (5.69)	56.44 (5.19)	57.68 (3.37)	58.51 (1.08)
	Cost	-31.75 (6.39)	-77.12 (2.11)	-95.81 (5.13)	-103.36 (3.77)
Hawaii	QALY	0.03 (0)	0.03 (0)	0.03 (0)	0.03 (0)
	Cost	-87.7 (1)	-105.53 (1.14)	-131.09 (1.32)	-141.81 (0.51)
Idaho	QALY	134.42 (2.51)	135.77 (6.04)	137.75 (4.32)	139.27 (12.3)
	Cost	-55.21 (1.54)	-79.88 (1.07)	-97.15 (1.5)	-105.1 (0.25)
Illinois	QALY	153.78 (5.13)	156.73 (8.91)	163.34 (12.19)	169.41 (12.45)
	Cost	23.14 (48.76)	9.85 (51.66)	-12.31 (7.32)	-20.22 (26.72)
Indiana	QALY	0.82 (0.02)	0.83 (0.01)	0.84 (0.01)	0.84 (0.02)
	Cost	-57.9 (0.96)	-80.97 (0.51)	-99.52 (0.43)	-107.02 (2.4)
Iowa	QALY	1.03 (0.07)	1.28 (0.1)	1.33 (0.04)	1.35 (0.09)
	Cost	-113.26 (0.63)	-123.7 (1.9)	-148.09 (0.91)	-158.75 (1.62)
Kansas	QALY	63.98 (7.43)	65.58 (9.06)	66.83 (9.88)	67.75 (6.62)
	Cost	-58.3 (1.63)	-98.09 (1.73)	-122.25 (1.29)	-132.17 (2.01)
Kentucky	QALY	82.14 (3.88)	80.48 (2.03)	83.2 (3.61)	85.41 (11.17)
	Cost	-58.49 (0.87)	-65.72 (2.88)	-83.24 (0.71)	-89.78 (3.55)
Louisiana	QALY	105.21 (7.75)	107.34 (8.12)	115.66 (1.4)	123.41 (7.9)
	Cost	-7.17 (16.27)	-21.33 (20.12)	-37.87 (13.32)	-44.18 (30.28)
Maine	QALY	4.15 (0.24)	5.24 (0.19)	5.35 (0.61)	5.43 (0.4)
	Cost	-58.55 (1.84)	-104.8 (0.41)	-127.74 (1.59)	-137.41 (2.77)
Maryland	QALY	49.43 (4.69)	50.34 (6.56)	50.99 (4.11)	51.41 (3.86)
	Cost	-76.48 (2.54)	-124.3 (0.76)	-153.23 (1.77)	-165.32 (3.24)
Massachusetts	QALY	163.55 (3.52)	163.12 (2.5)	166.96 (4.34)	170.33 (2.52)
	Cost	-97.21 (1.96)	-112.26 (3.03)	-143.61 (4.82)	-156.72 (0.8)
Michigan	QALY	125.61 (8.23)	130.95 (4.01)	134.72 (3.93)	137.72 (11.22)
	Cost	-39.25 (12.3)	-61.75 (8.53)	-81.37 (14.9)	-88.77 (10.56)
Minnesota	QALY	0.68 (0.04)	0.76 (0.03)	0.78 (0.04)	0.79 (0.04)
	Cost	-96.15 (0.9)	-131.43 (1.97)	-160.94 (3.04)	-172.89 (3.62)

Table D.3 Continued

State	Outcome	Policies			
		Current	P1	P2	P3
Mississippi	QALY	36.13 (3.23)	36.67 (3.47)	37.55 (2.76)	38.14 (1.01)
	Cost	-9.33 (17.04)	-42.83 (2.01)	-57.18 (12.63)	-63.36 (11.94)
Missouri	QALY	18.64 (1.14)	18.99 (1.61)	19.32 (1.12)	19.52 (2.99)
	Cost	-27.66 (3.1)	-73.27 (0.95)	-94.7 (3.42)	-102.63 (2.12)
Montana	QALY	40.2 (2.44)	43.57 (4.15)	44.56 (3.75)	45.12 (2.88)
	Cost	-12.97 (4.58)	-68.33 (3.09)	-90.5 (5.26)	-99.12 (4.16)
Nebraska	QALY	23.8 (2.11)	28.81 (2.41)	29.75 (0.78)	30.33 (1.4)
	Cost	-8.69 (1.71)	-104.31 (1.58)	-129.02 (1.74)	-138.35 (1.97)
Nevada	QALY	64.74 (4.65)	65.74 (5.91)	66.44 (1.08)	66.88 (2.02)
	Cost	-18.96 (2.59)	-60.2 (6.74)	-81.42 (6.18)	-90.46 (12.19)
New Hampshire	QALY	128.66 (11.56)	131.52 (9.23)	133.09 (5.86)	134.29 (10.8)
	Cost	-60.64 (2.51)	-96.41 (11.8)	-125.32 (15.96)	-136.15 (12.31)
New Jersey	QALY	223.9 (10.15)	212.61 (2.7)	224.28 (2.43)	234.26 (6.68)
	Cost	890.68 (157.74)	883.45 (171.14)	874.07 (86.49)	874.47 (142.34)
New Mexico	QALY	66.39 (4.11)	69.69 (1.39)	71.04 (8.27)	72.11 (2.84)
	Cost	-20.66 (6.52)	-35.5 (13.09)	-52.4 (5.17)	-58.95 (19.35)
New York	QALY	179.76 (1.54)	184.74 (4.74)	190.67 (8.49)	196.04 (5.88)
	Cost	231.17 (46.35)	218.7 (38.19)	197.86 (26.51)	190.82 (48.66)
North Carolina	QALY	34.31 (1.54)	34.91 (5.26)	35.31 (5.73)	35.57 (5.49)
	Cost	-39.14 (3.84)	-73.28 (3.97)	-92.28 (3.52)	-100.11 (1.64)
North Dakota	QALY	0.06 (0.01)	0.06 (0.01)	0.06 (0.01)	0.06 (0)
	Cost	-83.12 (2.27)	-125.46 (1.36)	-152.1 (2.73)	-164.14 (2.86)
Ohio	QALY	33.37 (2.28)	33.61 (2.03)	34.03 (0.58)	34.32 (1.95)
	Cost	-74.59 (1.93)	-90.96 (0.89)	-111.87 (1.71)	-120.73 (0.44)
Oklahoma	QALY	55.57 (6.71)	56.14 (7.42)	56.89 (5.19)	57.36 (3.05)
	Cost	-12.44 (9.79)	-39.18 (6.61)	-57.21 (20.82)	-64.43 (4.9)
Oregon	QALY	14.82 (2.89)	14.91 (1.84)	15.04 (1.01)	15.12 (1.75)
	Cost	-52.08 (2.21)	-75.97 (4.27)	-97.91 (4.12)	-107.09 (6.58)
Pennsylvania	QALY	124.52 (7.21)	128.82 (6.07)	131.14 (9.36)	133.04 (8.72)
	Cost	-60.73 (1.87)	-103.07 (5.4)	-125.67 (4.39)	-132.71 (3.51)
Rhode Island	QALY	188.04 (11.9)	198.46 (9.19)	201.98 (12.96)	205.02 (8.66)
	Cost	347.53 (50.53)	318.08 (43.38)	295.22 (88.05)	286.91 (85.49)
South Carolina	QALY	48.1 (1.51)	49.5 (1.26)	50.02 (6)	50.38 (4.39)
	Cost	-35.6 (1.21)	-84.12 (0.73)	-100.57 (1.47)	-107.78 (1.41)
South Dakota	QALY	108.67 (9.33)	113.56 (4.95)	115.69 (5.86)	117.22 (7)
	Cost	-16.72 (4.61)	-99.19 (0.58)	-123.24 (0.96)	-133.17 (3.21)
Tennessee	QALY	21.34 (2.04)	21.57 (3.37)	21.8 (3.77)	21.94 (2.65)
	Cost	-44.34 (1.09)	-81.65 (0.79)	-103.14 (1.69)	-113.39 (0.89)
Texas	QALY	2.21 (0.08)	2.24 (0.39)	2.3 (0.41)	2.34 (0.15)
	Cost	-34.43 (0.47)	-75.18 (0.66)	-94.35 (0.9)	-102.27 (2.37)
Utah	QALY	0.13 (0)	0.15 (0.01)	0.16 (0.01)	0.17 (0.02)
	Cost	-64.35 (0.7)	-92.51 (0.18)	-112.77 (1.08)	-120.83 (1)
Vermont	QALY	98.43 (2.98)	97.21 (7.03)	98.96 (4.19)	100.26 (10.63)
	Cost	-84.85 (1.2)	-86.99 (8.25)	-114.97 (6.19)	-125.98 (1.54)
Virginia	QALY	99.69 (4.25)	99.73 (4.17)	102.34 (4.96)	104.28 (10.43)
	Cost	195.92 (80.73)	176.21 (12.42)	149.1 (14.38)	137.9 (83.68)
Washington	QALY	31.08 (3.01)	31.34 (4.82)	31.51 (1)	31.63 (1.71)
	Cost	-95.42 (0.33)	-120.34 (1.66)	-145.58 (0.91)	-155.56 (2.66)
West Virginia	QALY	47.92 (5.51)	48.12 (6.65)	48.42 (6.43)	48.63 (1.25)
	Cost	-20.61 (7.48)	-38.81 (7.71)	-54.24 (1.5)	-60.11 (7.09)
Wisconsin	QALY	6.25 (0.48)	6.3 (0.18)	6.4 (0.37)	6.46 (0.93)
	Cost	-68.2 (0.98)	-92.17 (2.15)	-115.24 (2.69)	-124.07 (1.3)
Wyoming	QALY	23.12 (2.74)	23.19 (3.62)	23.33 (0.85)	23.43 (1.72)
	Cost	-81.51 (0.83)	-117.6 (0.43)	-143.74 (0.32)	-155.09 (1.64)

D.4. Cost-effectiveness probability

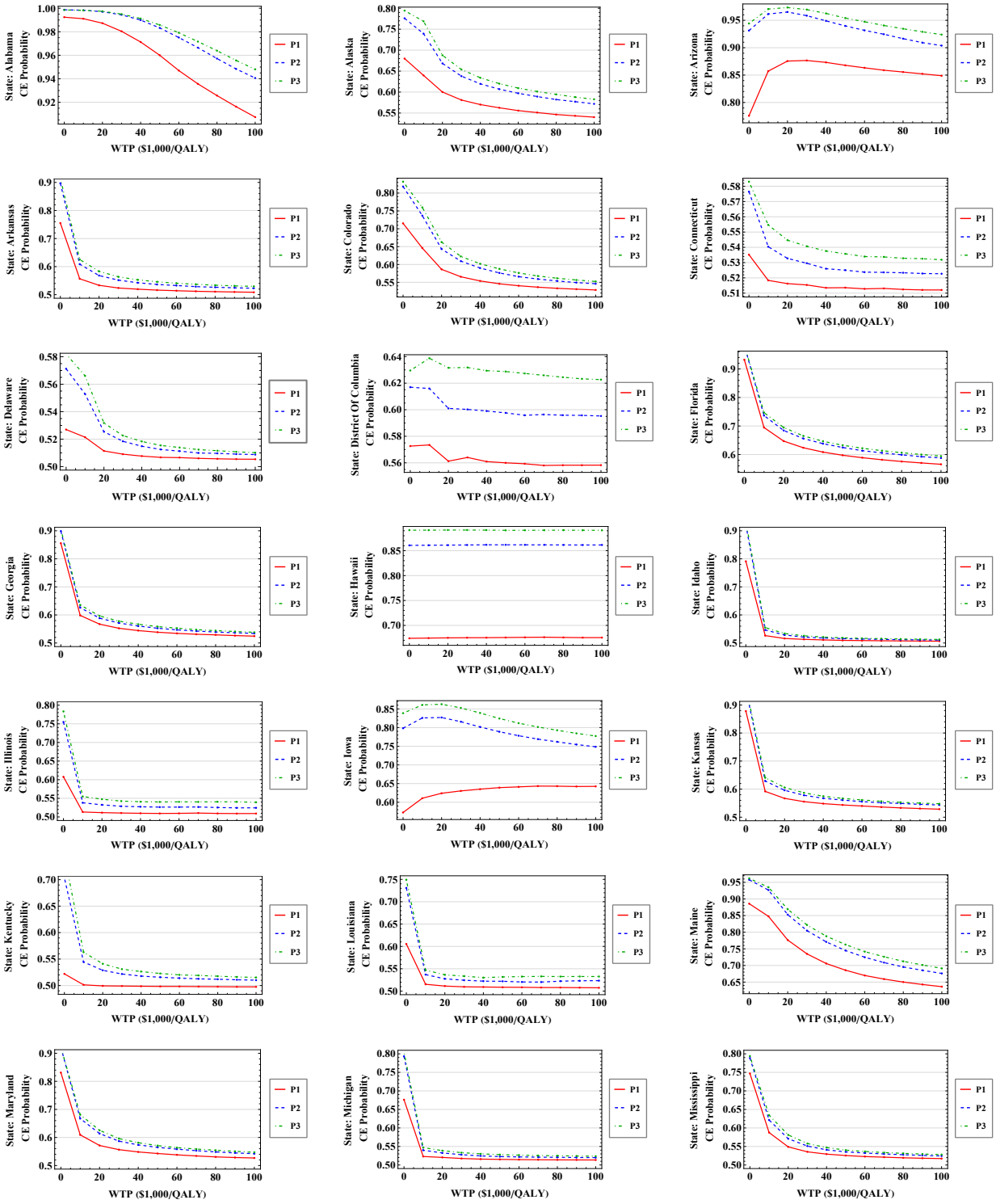

Figure D.1 (Color online) Cost-effectiveness probability of potential policies compared to the current policies

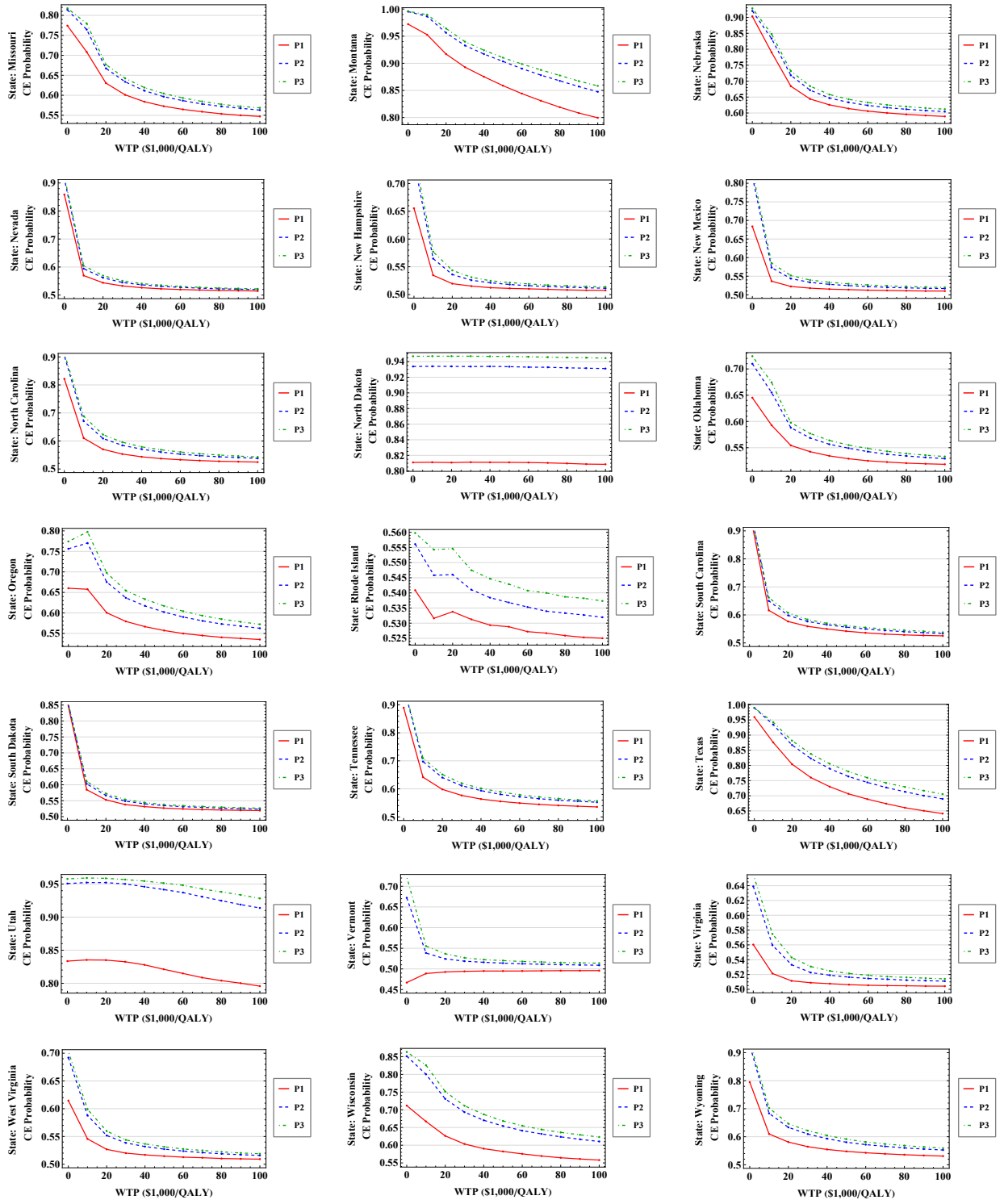

Figure D.1 Continued

D.5. Aversions in Health Outcomes

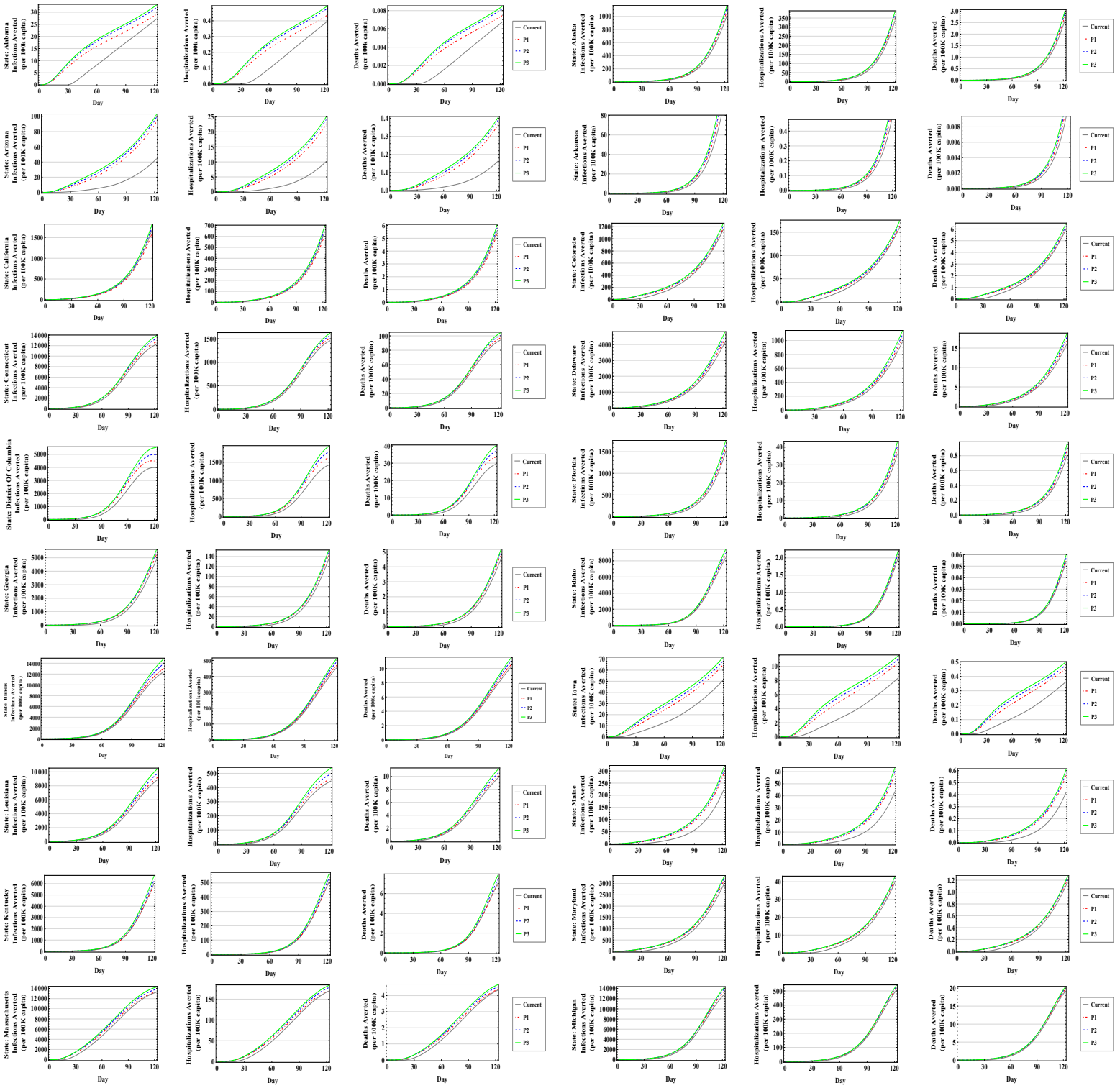

Figure D.2 (Color online) Average number of aversions in health outcomes under different intervention policies compared to no-intervention

Notes. In each row, the results in every three plots belong to one state.

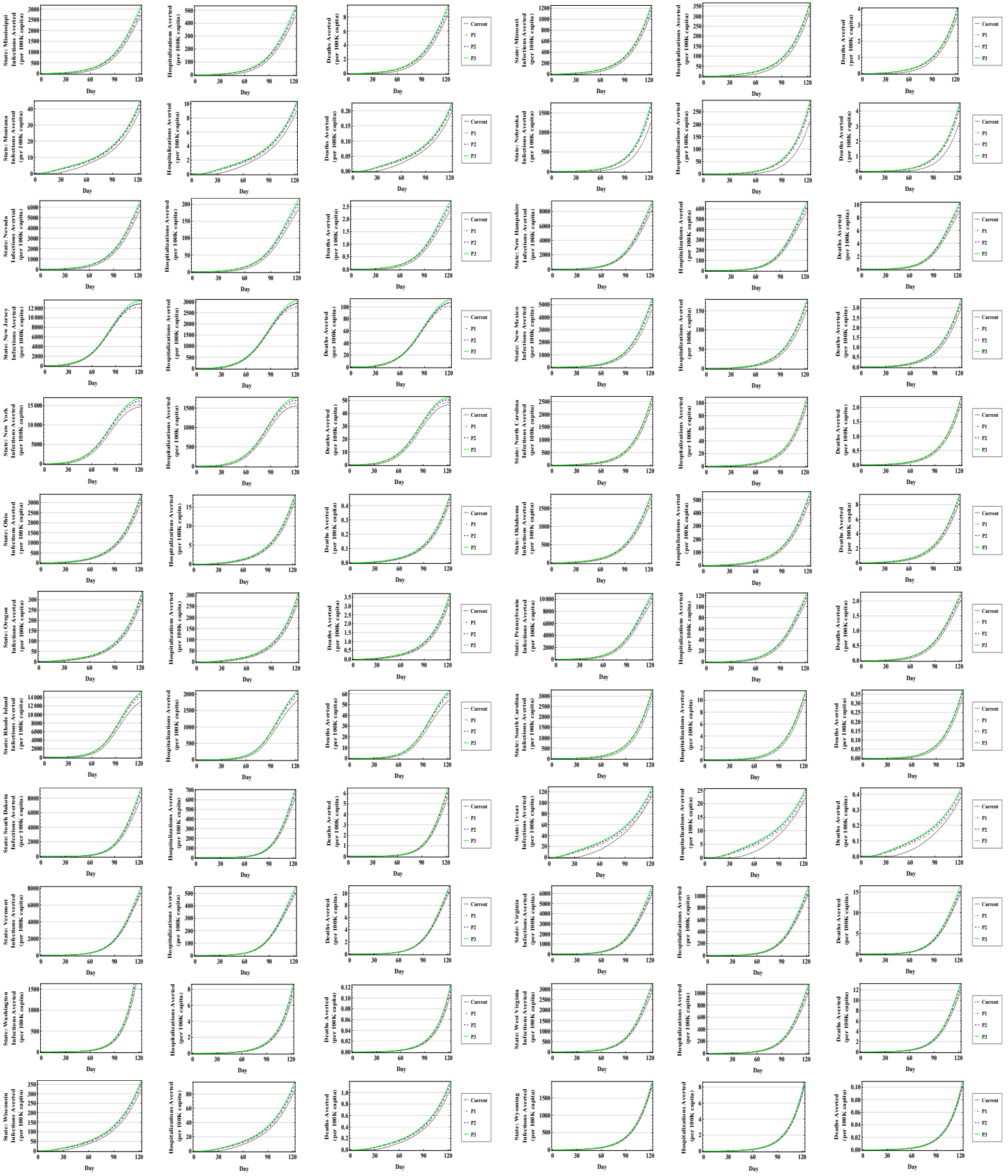

Figure D.2 Continued

APPENDIX E. Robustness Checks

E.1. qol scores. For the case where qol scores are lower than those in Equation (EC.1), we have:

$$q_i = \begin{cases} 1.0, & \text{if } i \in \{1, 11\} \quad \text{Compartment(s): susceptible, recovered,} \\ x \in [0.75, 0.85], & \text{if } i = 2 \quad \text{Compartment(s): exposed/presymptomatic,} \\ x \in [0.65, 0.75], & \text{if } i = 3 \quad \text{Compartment(s): infected asymptomatic,} \\ x \in [0.55, 0.65], & \text{if } i = 4 \quad \text{Compartment(s): infected symptomatic,} \\ x \in [0.45, 0.55], & \text{if } i = 5 \quad \text{Compartment(s): infected hospitalized (common bed),} \\ x \in [0.25, 0.35], & \text{if } i = 6 \quad \text{Compartment(s): infected hospitalized (ICU bed),} \\ x \in [0.05, 0.15], & \text{if } i = 7 \quad \text{Compartment(s): infected hospitalized (ICU bed \& ventilator),} \\ x \in [0.65, 0.75], & \text{if } i = 8 \quad \text{Compartment(s): carrier post discharge (was hospitalized common bed),} \\ x \in [0.55, 0.65], & \text{if } i = 9 \quad \text{Compartment(s): carrier post discharge (was hospitalized ICU bed),} \\ x \in [0.45, 0.55], & \text{if } i = 10 \quad \text{Compartment(s): carrier post discharge (was hospitalized ICU bed \& ventilator),} \\ 0.0, & \text{if } i = 12 \quad \text{Compartment(s): dead.} \end{cases} \tag{EC.3}$$

Furthermore, for the case where qol scores are higher than those in Equation (EC.1), we have:

$$q_i = \begin{cases} 1.0, & \text{if } i \in \{1, 11\} \quad \text{Compartment(s): susceptible, recovered,} \\ x \in [0.95, 1.0], & \text{if } i = 2 \quad \text{Compartment(s): exposed/presymptomatic,} \\ x \in [0.85, 0.95], & \text{if } i = 3 \quad \text{Compartment(s): infected asymptomatic,} \\ x \in [0.75, 0.85], & \text{if } i = 4 \quad \text{Compartment(s): infected symptomatic,} \\ x \in [0.65, 0.75], & \text{if } i = 5 \quad \text{Compartment(s): infected hospitalized (common bed),} \\ x \in [0.45, 0.55], & \text{if } i = 6 \quad \text{Compartment(s): infected hospitalized (ICU bed),} \\ x \in [0.25, 0.35], & \text{if } i = 7 \quad \text{Compartment(s): infected hospitalized (ICU bed \& ventilator),} \\ x \in [0.85, 0.95], & \text{if } i = 8 \quad \text{Compartment(s): carrier post discharge (was hospitalized common bed),} \\ x \in [0.75, 0.85], & \text{if } i = 9 \quad \text{Compartment(s): carrier post discharge (was hospitalized ICU bed),} \\ x \in [0.65, 0.75], & \text{if } i = 10 \quad \text{Compartment(s): carrier post discharge (was hospitalized ICU bed \& ventilator),} \\ 0.0, & \text{if } i = 12 \quad \text{Compartment(s): dead.} \end{cases} \tag{EC.4}$$

Table E.1 shows the results.

E.2. Proportion of population with lost income. We consider two alternative scenarios:

$$(p_1(t), p_2(t), p_3(t), p_4(t)) = \begin{cases} (50\%, 25\%, 15\%, 10\%), & \text{under Policy 1: if } 1 \le t \le 61, \\ (65\%, 20\%, 10\%, 5\%), & \text{under Policy 1: if } 62 \le t \le 92, \\ (80\%, 10\%, 4\%, 8\%), & \text{under Policy 1: if } 93 \le t \le 122, \\ (50\%, 25\%, 15\%, 10\%), & \text{under Policy 2: if } 1 \le t \le 92, \\ (65\%, 20\%, 10\%, 5\%), & \text{under Policy 2: if } 93 \le t \le 122, \\ (50\%, 25\%, 15\%, 10\%), & \text{under Policy 3: if } 1 \le t \le 122, \end{cases} \tag{EC.5}$$

$$(p_1(t), p_2(t), p_3(t), p_4(t)) = \begin{cases} (30\%, 30\%, 20\%, 20\%), & \text{under Policy 1: if } 1 \le t \le 61, \\ (45\%, 25\%, 15\%, 15\%), & \text{under Policy 1: if } 62 \le t \le 92, \\ (60\%, 20\%, 10\%, 10\%), & \text{under Policy 1: if } 93 \le t \le 122, \\ (30\%, 30\%, 20\%, 20\%), & \text{under Policy 2: if } 1 \le t \le 92, \\ (45\%, 25\%, 15\%, 15\%), & \text{under Policy 2: if } 93 \le t \le 122, \\ (30\%, 30\%, 20\%, 20\%), & \text{under Policy 3: if } 1 \le t \le 122, \end{cases} \tag{EC.6}$$

Compared to the baseline scenario in Equation (EC.2), Equation (EC.5) increases the ratio of population who lost less than 50% of their income, while Equation (EC.6) does the reverse. Also, it should be noted that, in all of our simulations, we consider a $\pm 10\%$ variation based on the corresponding values for p_j's. Table E.2 shows the results.

E.3. Projected infections. Table E.3 shows the results.

E.4. Population risk perception. Table E.4 shows the results.

E.5. Proportion Losing Income. Table E.5 shows the results.

E.6. Proportion quarantining. Table E.6 shows the results.

E.7. Capacity level of hospital resources. Table E.7 shows the results.

Table E.1 Robustness check: qol (shaded area represents the results under the baseline scenario) Avg (std dev) of outcomes compared to no-intervention per 100K capita Outcomes: QALY gained (1,000 years) and extra cost ($ million)

State	Outcome	Scenario 1: qol below baseline, Eq (EC.3)				Scenario 2: qol baseline, Eq (EC.1)				Scenario 3: qol above baseline, Eq (EC.4)			
		Policies				Policies				Policies			
		Current	P1	P2	P3	Current	P1	P2	P3	Current	P1	P2	P3
Arizona (AZ)	QALY	0.78 (0.03)	1.74 (0.05)	1.87 (0.06)	1.92 (0.09)	0.6 (0.04)	1.29 (0.04)	1.41 (0.03)	1.44 (0.08)	0.33 (0.02)	0.75 (0.03)	0.8 (0.04)	0.84 (0.03)
	Cost	-52 (1.04)	-73.97 (0.85)	-94.25 (1.7)	-106.44 (1.71)	-44.52 (1.4)	-68 (0.52)	-91.39 (0.72)	-99.11 (1.23)	-48.42 (0.81)	-69.82 (0.75)	-91.8 (1.21)	-101.69 (1.89)
California (CA)	QALY	50.55 (0.83)	50.16 (5.68)	50.58 (4.52)	50.59 (4.48)	26.53 (3.51)	26.1 (3.76)	26.48 (3.59)	26.71 (2.95)	15.4 (1.23)	15.36 (1.46)	15.37 (0.7)	15.64 (2.22)
	Cost	241.29 (100.44)	245.63 (65.69)	233.1 (70.18)	217.04 (60.24)	192.39 (38.96)	197.9 (17.52)	176.85 (9.9)	167.97 (53.27)	141.55 (53.64)	148.03 (9.34)	126.71 (39.21)	119.17 (49.96)
Georgia (GA)	QALY	53.5 (6.01)	54.98 (3.6)	57.05 (2.8)	58.64 (3.87)	36.07 (2.78)	37.41 (4.21)	38.29 (1.1)	38.89 (2.28)	18.71 (1.83)	18.79 (2.79)	19.44 (2.43)	20.02 (2.74)
	Cost	14.09 (9.65)	-25.08 (18.04)	-49.12 (9.21)	-58.99 (4.59)	20.91 (9.11)	-15.66 (11.25)	-36.03 (15.08)	-43.86 (2.76)	17.8 (12.07)	-14.63 (27.37)	-39.31 (33.35)	-49.06 (33.13)
Maryland (MD)	QALY	54.65 (4.31)	54.45 (3.2)	55.71 (5.72)	56.56 (4.6)	29.48 (0.98)	30.21 (0.59)	30.71 (1.47)	31.03 (0.64)	11.01 (1.27)	11.13 (1.84)	11.48 (1.26)	11.31 (0.53)
	Cost	-46.91 (4.55)	-93.89 (1.64)	-126.85 (8.59)	-142.6 (8.28)	-30.33 (12.79)	-68.63 (19.44)	-97.44 (19.51)	-110.45 (13.61)	-55.45 (2.55)	-105.25 (2.84)	-137.17 (3.41)	-151.92 (0.86)
Massachusetts	QALY	147.74 (7.96)	148.16 (6.82)	150.16 (4.12)	152.73 (7.54)	98.47 (3.68)	96.64 (3.56)	99.17 (2.09)	100.97 (4.8)	56.21 (1.49)	57.83 (0.73)	59.31 (2.9)	60.8 (3.58)
(MA)	Cost	30.24 (8.93)	24.87 (6.61)	1.21 (21.48)	-14.06 (3.51)	4.34 (12.21)	-6.4 (8.99)	-43.59 (17)	-59.01 (8.52)	32.37 (5.4)	27.13 (22.22)	3.5 (6.97)	-9.01 (9.57)
Michigan (MI)	QALY	140.89 (11.66)	149.15 (12.15)	155.2 (8.86)	155.02 (5.32)	97.15 (4.41)	102 (5.2)	105.44 (5.71)	108.23 (9.59)	55.21 (2.62)	56.21 (1.37)	59.85 (5.63)	60.18 (3.65)
	Cost	210.29 (12.97)	199.44 (14.16)	187.08 (77.78)	182.05 (98.88)	344.57 (48.72)	349.17 (54.16)	337.33 (57.16)	334.15 (65.37)	189.07 (29.47)	181.3 (24.9)	159.17 (66.87)	158.97 (64.49)
New York (NY)	QALY	212.43 (1.14)	213.19 (6.72)	219.61 (3.21)	228.71 (5.83)	132.22 (0.82)	138.6 (5.84)	139.57 (7.46)	145.51 (2.42)	81.28 (2.64)	84.62 (3.02)	88.21 (1.59)	89.52 (3.85)
	Cost	195.88 (218.37)	215.09 (146.36)	1203.87 (169.5)	250.44 (244.36)	1169.6 (234.66)	1220.65 (34.73)	1251.44 (99.75)	292.53 (133.89)	215.98 (160.41)	265.33 (102.57)	265.23 (108.44)	273.56 (271.34)
Pennsylvania	QALY	97.69 (10.12)	98.7 (8.96)	103.99 (1.55)	103.65 (4.96)	73.16 (4.1)	75.71 (3.52)	76.98 (2.51)	78.02 (7.78)	35.17 (1.14)	36.66 (1.06)	36.54 (2.34)	37.83 (1.12)
(PA)	Cost	67.11 (32.08)	44.82 (44.98)	27.54 (20.17)	20.69 (82.53)	21 (5.41)	-12.94 (40.24)	-35.49 (9.62)	-43.48 (33.62)	5.16 (25.03)	-35.85 (17.01)	-64.18 (16.04)	-74.48 (14.78)
Texas (TX)	QALY	2.26 (0.33)	2.3 (0.15)	2.42 (0.25)	2.4 (0.22)	1.4 (0.03)	1.42 (0.09)	1.46 (0.07)	1.46 (0.22)	0.86 (0.09)	0.85 (0.14)	0.91 (0.1)	0.91 (0.15)
	Cost	-28.9 (0.75)	-71.71 (1.18)	-98.34 (0.23)	-109.68 (2.42)	-28.99 (1.03)	-75.32 (0.37)	-100.33 (0.86)	-108.87 (1.01)	-26.82 (0.24)	-73.98 (1.61)	-95.88 (1.99)	-108.8 (0.28)

Notion: moving from scenarios 1 to 3, health conditions across all compartments get better (i.e., the population get healthier).

Observation 1: the QALY saved would be lower in a healthier population (e.g., scenario 3 compared to scenarios 1-2).

Observation 2: we observe mixed results on the impact of scenarios 1-3 on the extra cost: AZ/GA/NY/TX (little to no impact), MD/MA (curvilinear trend), and CA/MI/PA (decreasing trend).

Table E.2 Robustness check: % of lost income (shaded area represents the results under the baseline scenario) Avg (std dev) of outcomes compared to no-intervention per 100K capita Outcomes: QALY gained (1,000 years) and extra cost ($ million)

State	Outcome	Scenario 1: proportion of lost income, Eq (EC.5)				Scenario 2: proportion of lost income, Eq (EC.2)				Scenario 3: proportion of lost income, Eq (EC.6)			
		Policies				Policies				Policies			
		Current	P1	P2	P3	Current	P1	P2	P3	Current	P1	P2	P3
Arizona (AZ)	QALY	0.59 (0.04)	1.32 (0.09)	1.41 (0.02)	1.48 (0.05)	0.6 (0.04)	1.29 (0.04)	1.41 (0.03)	1.44 (0.08)	0.53 (0.02)	1.2 (0.03)	1.25 (0.06)	1.29 (0.07)
	Cost	-94.1 (0.95)	-110.94 (0.56)	-134.65 (1.01)	-141.23 (1.33)	-44.52 (1.4)	-68 (0.52)	-91.39 (0.72)	-99.11 (1.23)	-24.24 (1.52)	-44.5 (0.25)	-63.28 (1.51)	-74.6 (2.21)
California (CA)	QALY	26.87 (3.54)	25.91 (3.67)	27.07 (1.62)	26.79 (3.16)	26.53 (3.51)	26.1 (3.76)	26.48 (3.59)	26.71 (2.95)	26.18 (1.18)	25.39 (3.37)	25.95 (2.21)	26.13 (3.71)
	Cost	118 (45)	123.52 (7.38)	101.42 (40.97)	100.01 (32.12)	192.39 (38.96)	197.9 (17.52)	176.85 (9.9)	167.97 (53.27)	192.49 (34.28)	200.82 (60.09)	180.59 (45.3)	173.6 (53.97)
Georgia (GA)	QALY	32.19 (0.79)	33.96 (4.39)	34.95 (5.14)	34.21 (2.21)	36.07 (2.78)	37.41 (4.21)	38.29 (1.1)	38.89 (2.28)	42.95 (4.59)	43.75 (1.57)	46.45 (1.57)	46.24 (1.29)
	Cost	-30.54 (6.87)	-87.36 (10.52)	-111.98 (12.82)	-125.6 (12.83)	20.91 (9.11)	-15.66 (11.25)	-36.03 (15.08)	-43.86 (2.76)	20.2 (16.75)	-8.36 (8.19)	-32.64 (13.34)	-41.32 (7.99)
Maryland (MD)	QALY	29.27 (2.18)	29.81 (1.04)	31.18 (3.58)	30.86 (3.25)	29.48 (0.98)	30.21 (0.59)	30.71 (1.47)	31.03 (0.64)	28.53 (1.32)	28.97 (4.05)	29.84 (1.15)	30.52 (4.24)
	Cost	-93.78 (7.8)	-151.78 (10.06)	-191.68 (9.78)	-200.36 (2.17)	-30.33 (12.79)	-68.63 (19.44)	-97.44 (19.51)	-110.45 (13.61)	-11.38 (11.55)	-49.37 (2.99)	-85.97 (11.28)	-98.13 (6.91)
Massachusetts	QALY	98.5 (1.56)	97.68 (1.32)	98.66 (2.02)	102.53 (1.89)	98.47 (3.68)	96.64 (3.56)	99.17 (2.09)	100.97 (4.8)	105.2 (4.22)	101.72 (5.24)	105.87 (2.72)	107.19 (2.31)
(MA)	Cost	-42.8 (16.49)	-58.02 (21.89)	-95.24 (7.89)	-106.14 (15.76)	4.34 (12.21)	-6.4 (8.99)	-43.59 (17)	-59.01 (8.52)	54.99 (20.99)	49.19 (18.84)	26.37 (20.33)	17.82 (24.07)
Michigan (MI)	QALY	106.75 (8.16)	110 (5.52)	115.93 (3.3)	119.09 (4.39)	97.15 (4.41)	102 (5.2)	105.44 (5.71)	108.23 (9.59)	101.53 (6.25)	104.55 (6.28)	107.42 (7.62)	107.99 (5.6)
	Cost	250.41 (23.55)	247.55 (68.53)	230.54 (61.59)	227.46 (120.83)	344.57 (48.72)	349.17 (54.16)	337.33 (57.16)	334.15 (65.37)	315.24 (55.42)	318.83 (48.66)	313.3 (40.23)	298.66 (27.17)
New York (NY)	QALY	132.3 (1.52)	136.86 (4.09)	145.26 (4.46)	145.68 (1.16)	132.22 (0.82)	138.6 (5.84)	139.57 (7.46)	145.51 (2.42)	131.56 (6.95)	135.28 (6.93)	137.96 (7.16)	147.24 (1.23)
	Cost	902.98 (53.03)	930.4 (217.37)	926.4 (122.22)	920.43 (231.7)	1169.6 (234.66)	1220.65 (34.73)	1251.44 (99.75)	292.53 (133.89)	1312.29 (153.8)	389.78 (190.89)	364.77 (179.86)	346.87 (320.59)
Pennsylvania	QALY	70.16 (3.85)	73.51 (1.46)	73.77 (1.99)	75.27 (5.58)	73.16 (4.1)	75.71 (3.52)	76.98 (2.51)	78.02 (7.78)	69.26 (3.15)	71.22 (5.83)	73.24 (3.05)	73.29 (6.32)
(PA)	Cost	49.64 (38.71)	19.28 (74.91)	3.89 (63.8)	-4.23 (76.62)	21 (5.41)	-12.94 (40.24)	-35.49 (9.62)	-43.48 (33.62)	12.43 (4.05)	-14.51 (20.33)	-41.7 (18.89)	-52.79 (20.64)
Texas (TX)	QALY	1.56 (0.07)	1.58 (0.15)	1.65 (0.09)	1.65 (0.18)	1.4 (0.03)	1.42 (0.09)	1.46 (0.07)	1.46 (0.22)	1.27 (0.06)	1.28 (0.12)	1.34 (0.2)	1.33 (0.09)
	Cost	-62.76 (1.22)	-118.28 (1.25)	-144.27 (1.47)	-154.6 (1.69)	-28.99 (1.03)	-75.32 (0.37)	-100.33 (0.86)	-108.87 (1.01)	-8.44 (1.27)	-47.68 (0.85)	-69.29 (1.47)	-79.02 (2.34)

Notion: moving from scenarios 1 to 3, a higher proportion of population would have lost more than 50\% of their income under intervention policies.

Observation 1: we observe mixed results on the impact of scenarios 1-3 on the QALY saved: AZ/CA/PA (little to no impact), MD/NY (curvilinear trend), and GA/MA/MI/TX (decreasing/increasing trend).

Observation 2: the extra cost would be higher when a higher proportion of population would lose income (e.g., scenario 3 compared to scenarios 1-2). Exception: MI (a curvilinear relationship) and PA (decrea

Table E.3 **Robustness check: projected infections (shaded area represents the results under the baseline scenario)**
Avg (std dev) of outcomes compared to no-intervention per 100K capita
Outcomes: QALY gained (1,000 years) and extra cost ($ million)

State	Outcome	Scenario 1: projected infections (our estimation)				enario 2: projected infections (fraction of total population = 10				enario 3: projected infections (fraction of total population = 50			
		Policies				Policies				Policies			
		Current	P1	P2	P3	Current	P1	P2	P3	Current	P1	P2	P3
Arizona (AZ)	QALY	0.6 (0.04)	1.29 (0.04)	1.41 (0.03)	1.44 (0.08)	2.95 (0.03)	8.45 (0.56)	8.97 (0.94)	9.1 (0.3)	-3.09 (0.82)	25.04 (0.22)	30.35 (1.45)	34.66 (0.68)
	Cost	-44.52 (1.4)	-68 (0.52)	-91.39 (0.72)	-99.11 (1.23)	-50.39 (1.37)	-74.15 (1.68)	-96.31 (1.88)	-106.96 (0.37)	-50.16 (0.3)	-71.77 (0.46)	-95.02 (0.79)	-104.42 (0.37)
California (CA)	QALY	26.53 (3.51)	26.1 (3.76)	26.48 (3.59)	26.71 (2.95)	103.81 (1.08)	91.55 (2.82)	101.04 (1.5)	113.08 (5.5)	98.8 (2.21)	85.13 (2.24)	96.24 (3.21)	111.2 (4.79)
	Cost	192.39 (38.96)	197.9 (17.52)	176.85 (9.9)	167.97 (53.27)	-24.37 (15.78)	-21.48 (13.38)	-43.72 (11.33)	-49.38 (15.81)	-37.42 (7.33)	-35.48 (9.04)	-59.05 (5.12)	-64.72 (4.69)
Georgia (GA)	QALY	36.07 (2.78)	37.41 (4.21)	38.29 (1.1)	38.89 (2.28)	27.84 (2.2)	28.7 (1.32)	28.17 (2.18)	28.33 (1.97)	23.39 (0.61)	17.13 (1.31)	21.72 (0.94)	27.86 (0.42)
	Cost	20.91 (9.11)	-15.66 (11.25)	-36.03 (15.08)	-43.86 (2.76)	-28.31 (1.47)	-76.78 (1.02)	-101.72 (0.8)	-112.72 (0.59)	-22.69 (1.36)	-77.27 (0.66)	-99.35 (2.07)	-110.01 (1.6)
Maryland (MD)	QALY	29.48 (0.98)	30.21 (0.59)	30.71 (1.47)	31.03 (0.64)	69.58 (0.8)	72.61 (2.45)	77.81 (0.58)	83.3 (4.93)	23.09 (1.1)	25.65 (0.92)	26.35 (1.48)	25.88 (1.37)
	Cost	-30.33 (12.79)	-68.63 (19.44)	-97.44 (19.51)	-110.45 (13.61)	-38.11 (4.97)	-81.84 (1.54)	-112.99 (1.69)	-127 (4.56)	-62.24 (0.51)	-114.76 (0.86)	-151.29 (0.59)	-164.37 (1)
Massachusetts	QALY	98.47 (3.68)	96.64 (3.56)	99.17 (2.09)	100.97 (4.8)	102.96 (1.69)	100.32 (3.11)	103.01 (2.27)	107.71 (2.78)	97.79 (5.33)	99.21 (0.76)	102.5 (4.86)	104.03 (3.45)
(MA)	Cost	4.34 (12.21)	-6.4 (8.99)	-43.59 (17)	-59.01 (8.52)	27.17 (9.61)	20.34 (8.75)	-4.92 (11.02)	-19.32 (12.32)	20.77 (20.17)	13.69 (10.48)	-15.02 (15.39)	-32.58 (3.65)
Michigan (MI)	QALY	97.15 (4.41)	102 (5.2)	105.44 (5.71)	108.23 (9.59)	74.68 (3.23)	77.52 (2.59)	77.49 (4.61)	81.59 (6.08)	71.84 (1.45)	74.72 (4.18)	74.71 (1.15)	76.04 (3.12)
	Cost	344.57 (48.72)	349.17 (54.16)	337.33 (57.16)	334.15 (65.37)	-51.69 (1.55)	-73.78 (0.31)	-99.2 (1.96)	-106.59 (0.77)	-53.28 (1.46)	-75.15 (1.03)	-98.12 (2.24)	-109.22 (2.47)
New York (NY)	QALY	132.22 (0.82)	138.6 (5.84)	139.57 (7.46)	145.51 (2.42)	63.14 (1.88)	63.3 (5.41)	65.02 (5.93)	64.42 (2.64)	59.46 (5.09)	59.65 (5.11)	61.86 (2.86)	60.24 (6.26)
	Cost	1169.6 (234.66)	1220.65 (34.73)	1251.44 (99.75)	292.53 (133.89)	32.8 (14.71)	21.57 (25.18)	3.23 (25.96)	-7.07 (14.27)	25.45 (19.42)	15.38 (6.04)	-5.13 (24.82)	-17.51 (24.91)
Pennsylvania	QALY	73.16 (4.1)	75.71 (3.52)	76.98 (2.51)	78.02 (7.78)	53.41 (3.35)	53.66 (4.51)	54.27 (3.33)	55.05 (2.23)	29.42 (0.48)	32.79 (0.66)	33.02 (0.4)	32.77 (2.24)
(PA)	Cost	21 (5.41)	-12.94 (40.24)	-35.49 (9.62)	-43.48 (33.62)	-41.79 (1.87)	-87.33 (1.3)	-111.8 (1.07)	-124.78 (2.35)	-40.67 (0.76)	-88.79 (1.58)	-116.9 (2)	-127.61 (2.52)
Texas (TX)	QALY	1.4 (0.03)	1.42 (0.09)	1.46 (0.07)	1.46 (0.22)	12.72 (1.05)	13.25 (0.89)	13.19 (0.92)	13.46 (1.08)	10.47 (1.03)	11.13 (0.42)	11.65 (0.32)	11.9 (1.34)
	Cost	-28.99 (1.03)	-75.32 (0.37)	-100.33 (0.86)	-108.87 (1.01)	-25.91 (0.78)	-71.78 (0.49)	-93.83 (0.6)	-104.29 (2.34)	-26.99 (1.45)	-77.14 (1.57)	-100.53 (2.06)	-109.16 (0.3)

Notion: moving from scenarios 1 to 3, the number of projected infections would increase.

Observation 1: we observe mixed results on the impact of scenarios 1-3 on the QALY saved: MA (little to no impact), MD (curvilinear trend), GA/MI/MA/PA (decreasing trend), and AZ/CA/TX (increasing tr

Observation 2: the extra cost would be lower when the number of projected infections increases (e.g., scenario 3 compared to scenarios 1-2). Exception: AZ/TX (little to no impact) and MA (increasing trend).

Table E.4 Robustness check: risk perception (shaded area represents the results under the baseline scenario)
Avg (std dev) of outcomes compared to no-intervention per 100K capita
Outcomes: QALY gained (1,000 years) and extra cost ($ million)

State	Outcome	Scenario 1: risk perception about the negative outcomes of the pandemic (α = 0.0)				Scenario 2: risk perception about the negative outcomes of the pandemic (α = -0.1)				Scenario 3: risk perception about the negative outcomes of the pandemic (α = -0.2)				Scenario 4: risk perception about the negative outcomes of the pandemic (α = -0.5)			
		Policies				Policies				Policies				Policies			
		Current	P1	P2	P3	Current	P1	P2	P3	Current	P1	P2	P3	Current	P1	P2	P3
Arizona (AZ)	QALY	0.63 (0.03)	1.35 (0.04)	1.48 (0.09)	1.55 (0.12)	0.6 (0.04)	1.29 (0.04)	1.41 (0.03)	1.44 (0.08)	0.63 (0.01)	1.33 (0.02)	1.48 (0.09)	1.49 (0.1)	0.56 (0.02)	1.28 (0.07)	1.34 (0.02)	1.4 (0.07)
	Cost	-46.45 (1.11)	-68.11 (1.52)	-94.05 (0.26)	-100.62 (0.91)	-44.52 (1.4)	-68 (0.52)	-91.39 (0.72)	-99.11 (1.23)	-49.02 (1.6)	-72.02 (0.92)	-95.68 (1.16)	-103.78 (2.26)	-50.99 (0.99)	-71.33 (1.65)	-92.71 (0.63)	-98.58 (0.47)
California (CA)	QALY	32.77 (1.41)	32.07 (2.16)	32.97 (1.73)	32.62 (4.1)	26.53 (3.51)	26.1 (3.76)	26.48 (3.59)	26.71 (2.95)	33.83 (4.32)	34.19 (4.11)	34.79 (0.99)	33.96 (5.09)	24.77 (3.01)	24.03 (3.05)	24.39 (1.88)	25.23 (2.58)
	Cost	189.93 (35.2)	200.2 (35.71)	180.63 (49.8)	170.54 (52.53)	192.39 (38.96)	197.9 (17.52)	176.85 (9.9)	167.97 (53.27)	241.82 (15.06)	246.07 (67.81)	222.58 (80.79)	223.44 (90.05)	122.73 (9.89)	121.35 (14.68)	106.29 (31.88)	100.71 (12.89)
Georgia (GA)	QALY	30.57 (4.99)	32.27 (3.07)	33.1 (1.87)	32.52 (3.75)	36.07 (2.78)	37.41 (4.21)	38.29 (1.1)	38.89 (2.28)	30.34 (0.73)	31.42 (3.05)	32.73 (2.76)	32.24 (3.27)	22.74 (2.39)	23.44 (0.36)	24.08 (0.35)	24.65 (0.81)
	Cost	0.13 (2.84)	-48.89 (4.78)	-69.83 (15.24)	-80.8 (4.5)	20.91 (9.11)	-15.66 (11.25)	-36.03 (15.08)	-43.86 (2.76)	0.22 (9.12)	-47.97 (10.35)	-69.71 (5.41)	-81.34 (5.55)	3.87 (9.13)	-38.75 (5.66)	-63.15 (4.23)	-73.82 (6.46)
Maryland (MD)	QALY	30.86 (3.77)	32.06 (2.23)	31.92 (2.2)	32.04 (1.49)	29.48 (0.98)	30.21 (0.59)	30.71 (1.47)	31.03 (0.64)	18.96 (3.05)	19.47 (3.26)	20.22 (0.35)	20.42 (1.25)	16.47 (0.41)	16.86 (1.23)	17.63 (1.36)	17.83 (0.53)
	Cost	-34.94 (8.47)	-81.46 (10.26)	-121.5 (11.44)	-138.61 (4.15)	-30.33 (12.79)	-68.63 (19.44)	-97.44 (19.51)	-110.45 (13.61)	-35.66 (10.13)	-78.11 (15.29)	-112.55 (24.75)	-126.17 (9.68)	-16.69 (10.16)	-62.04 (14.26)	-94.52 (21.65)	-106.37 (22.73)
Massachusetts	QALY	112.37 (2.85)	110.85 (0.79)	116.57 (6.06)	117.12 (3.07)	98.47 (3.68)	96.64 (3.56)	99.17 (2.09)	100.97 (4.8)	78.9 (2.69)	79.21 (0.92)	82.02 (1.16)	84.67 (3.76)	19.17 (0.96)	19.11 (1.84)	20.76 (1.78)	22.74 (0.91)
(MA)	Cost	42.22 (18.5)	32.65 (26.22)	10.24 (7.7)	-0.4 (22.36)	4.34 (12.21)	-6.4 (8.99)	-43.59 (17)	-59.01 (8.52)	-26.26 (8.8)	-36.92 (10.29)	-73.56 (2.58)	-88.72 (8.28)	-98.51 (2.92)	-108.61 (2.6)	-144.73 (1.33)	-161.14 (2.95)
Michigan (MI)	QALY	106.79 (5.27)	113.36 (8.24)	117.63 (6.61)	120.54 (7.81)	97.15 (4.41)	102 (5.2)	105.44 (5.71)	108.23 (9.59)	90.99 (4.52)	94.03 (4.47)	97.51 (6.48)	101.93 (4.6)	47.06 (2.07)	50.57 (1.89)	55.16 (3.34)	56.82 (5.03)
	Cost	350.81 (57.49)	352.73 (152.51)	331.79 (63.22)	330.58 (76.67)	344.57 (48.72)	349.17 (54.16)	337.33 (57.16)	334.15 (65.37)	197.47 (95.58)	196.9 (51.42)	181.43 (48.97)	185.54 (41.52)	111.67 (51.09)	106.25 (36.44)	94.23 (25.51)	92.51 (30.54)
New York (NY)	QALY	145.48 (7.19)	147.62 (6.95)	154.27 (4.44)	163.02 (3.93)	132.22 (0.82)	138.6 (5.84)	139.57 (7.46)	145.51 (2.42)	131.07 (3.12)	136.78 (2.27)	138.08 (3.66)	142.98 (6.83)	83.33 (6.35)	90.65 (5.41)	95.68 (3.06)	98.76 (4.36)
	Cost	1199.56 (271.86)	1263 (117.6)	1257.52 (249.31)	1298.61 (298.09)	1169.6 (234.66)	1220.65 (34.73)	1251.44 (99.75)	1292.53 (133.89)	778.84 (112.02)	793.38 (137.35)	819.32 (127.9)	800.46 (248.06)	596.34 (36.84)	620.64 (57.23)	645.18 (38.12)	636.6 (133.19)
Pennsylvania	QALY	65.99 (3.77)	68.48 (4.23)	69.41 (5.2)	69.56 (6.08)	73.16 (4.1)	75.71 (3.52)	76.98 (2.51)	78.02 (7.78)	70.49 (1.79)	73.97 (0.77)	76.54 (5.96)	75.14 (6.47)	40.82 (2.68)	44.22 (3.69)	45.81 (3.5)	46.68 (0.64)
(PA)	Cost	-25.78 (6.31)	-70.95 (9.36)	-99.53 (2.27)	-111.18 (9.76)	21 (5.41)	-12.94 (40.24)	-35.49 (9.62)	-43.48 (33.62)	27.87 (37.43)	1.44 (13.43)	-24.5 (14.01)	-36.03 (22.9)	-18.22 (13.17)	-61.11 (12.08)	-90.28 (9.78)	-100.51 (14.35)
Texas (TX)	QALY	1.69 (0.08)	1.67 (0.19)	1.74 (0.24)	1.76 (0.19)	1.4 (0.03)	1.42 (0.09)	1.46 (0.07)	1.46 (0.22)	1.65 (0.11)	1.66 (0.04)	1.69 (0.14)	1.69 (0.09)	1.27 (0.12)	1.31 (0.1)	1.32 (0.02)	1.35 (0.1)
	Cost	-26.5 (0.8)	-70.37 (1.58)	-93.01 (0.34)	-103.2 (2.44)	-28.99 (1.03)	-75.32 (0.37)	-100.33 (0.86)	-108.87 (1.01)	-27.36 (0.24)	-70.09 (1.29)	-94.69 (0.82)	-105.67 (0.3)	-29.02 (1.6)	-73.91 (1.47)	-98.15 (1.83)	-107.33 (1.15)

Notion: moving from scenarios 1 to 4, people's level of risk perception about the negative outcomes of the pandemic would increase.

Observation 1: the QALY saved would be lower when the risk perception increases (e.g., scenario 4 compared to scenarios 1-3).

Observation 2: we observe mixed results on the impact of scenarios 1-4 on the extra cost: AZ/TX (little to no impact), CA/GA/PA (curvilinear trend), MA/MI/NY (decreasing trend), and MD (increasing trend).

Table E.5 Robustness check: % of lost income when not going out under no-intervention (shaded area represents the results under the baseline scenario) Avg (std dev) of outcomes compared to no-intervention per 100K capita Outcomes: QALY gained (1,000 years) and extra cost ($ million)

State	Outcome	Scenario: % people losing income when not going out under no intervention (ξ = 0.25)				Scenario: % people losing income when not going out under no intervention (ξ = 0.50)				Scenario: % people losing income when not going out under no intervention (ξ = 0.75)			
		Policies				Policies				Policies			
		Current	P1	P2	P3	Current	P1	P2	P3	Current	P1	P2	P3
Arizona (AZ)	QALY	0.55 (0.01)	1.25 (0.06)	1.36 (0.08)	1.41 (0.05)	0.6 (0.04)	1.29 (0.04)	1.41 (0.03)	1.44 (0.08)	0.6 (0.03)	1.31 (0.04)	1.42 (0.04)	1.47 (0.09)
	Cost	-110 (1.15)	-127.58 (0.43)	-153 (1.59)	-159.62 (2.38)	-44.52 (1.4)	-68 (0.52)	-91.39 (0.72)	-99.11 (1.23)	7.05 (1.29)	-9.49 (0.44)	-31.95 (0.6)	-41.74 (0.81)
California (CA)	QALY	33.12 (4.71)	32.18 (2.78)	32.59 (2.49)	33.99 (2.81)	26.53 (3.51)	26.1 (3.76)	26.48 (3.59)	26.71 (2.95)	30.91 (4.87)	30.41 (1.5)	31.13 (3.26)	31.19 (0.78)
	Cost	174.03 (17.87)	183.66 (55.07)	165.11 (85.85)	157.77 (18.99)	192.39 (38.96)	197.9 (17.52)	176.85 (9.9)	167.97 (53.27)	230.16 (35.92)	231.79 (28.28)	214.86 (38.52)	211.89 (24.19)
Georgia (GA)	QALY	32.53 (0.91)	34.02 (2.74)	34.7 (3.39)	35.34 (1.32)	36.07 (2.78)	37.41 (4.21)	38.29 (1.1)	38.89 (2.28)	38.91 (4.22)	39.97 (4.57)	41.12 (1.07)	41.79 (5.66)
	Cost	-37.1 (12.72)	-81.05 (27.25)	-102.78 (15.83)	-110.25 (18.2)	20.91 (9.11)	-15.66 (11.25)	-36.03 (15.08)	-43.86 (2.76)	50.83 (7.15)	21.83 (16.3)	6.2 (7.35)	-1 (13.91)
Maryland (MD)	QALY	26.35 (1.25)	27.6 (3.67)	28.05 (2.24)	27.81 (1.03)	29.48 (0.98)	30.21 (0.59)	30.71 (1.47)	31.03 (0.64)	23.19 (2.77)	24.22 (2.7)	24.72 (2.06)	24.21 (2.15)
	Cost	-113.43 (32.1)	-162.21 (9.28)	-197.08 (15.01)	-209.72 (21.84)	-30.33 (12.79)	-68.63 (19.44)	-97.44 (19.51)	-110.45 (13.61)	37.89 (11.45)	8.21 (8.96)	-22.07 (19.78)	-35.43 (4.25)
Massachusetts	QALY	106.27 (5.37)	104.92 (3.09)	106.47 (1.81)	110.9 (2.89)	98.47 (3.68)	96.64 (3.56)	99.17 (2.09)	100.97 (4.8)	99.26 (0.81)	96.38 (3.02)	101.59 (1.28)	103.57 (4.83)
(MA)	Cost	-14.76 (13.8)	-24.89 (5.53)	-65.29 (7.68)	-81.07 (19.97)	4.34 (12.21)	-6.4 (8.99)	-43.59 (17)	-59.01 (8.52)	85.24 (3.57)	76.63 (12.11)	52.24 (20.9)	45.9 (4.69)
Michigan (MI)	QALY	107.39 (4.98)	113.99 (5.48)	114.86 (6.17)	116.87 (3.14)	97.15 (4.41)	102 (5.2)	105.44 (5.71)	108.23 (9.59)	106.61 (7.06)	112.08 (5.13)	112.3 (1.7)	116.31 (2.69)
	Cost	79.02 (31.62)	67.95 (52.09)	55.89 (37.05)	49.39 (28.32)	344.57 (48.72)	349.17 (54.16)	337.33 (57.16)	334.15 (65.37)	272.12 (62.64)	278.93 (76.51)	259.93 (98.95)	260.71 (53.99)
New York (NY)	QALY	149.81 (0.95)	150.53 (5.62)	156.97 (6.01)	161.34 (5.44)	132.22 (0.82)	138.6 (5.84)	139.57 (7.46)	145.51 (2.42)	137.91 (2.58)	146.48 (5.25)	148.11 (5.64)	153.2 (1.38)
	Cost	1155.27 (57.96)	1254.01 (44.35)	191.55 (270.35)	201.42 (136.05)	1169.6 (234.66)	1220.65 (34.73)	1251.44 (99.75)	292.53 (133.89)	1112.75 (64.25)	188.14 (271.07)	130.27 (287.65)	159.58 (216.85)
Pennsylvania	QALY	69.5 (2.35)	72.87 (2.92)	73.44 (1.2)	75.1 (6.21)	73.16 (4.1)	75.71 (3.52)	76.98 (2.51)	78.02 (7.78)	72.8 (3.62)	75.79 (3.71)	76 (1.18)	77.76 (3.95)
(PA)	Cost	-54.2 (21.65)	-98.53 (24.81)	-123.74 (18.1)	-140.15 (24.49)	21 (5.41)	-12.94 (40.24)	-35.49 (9.62)	-43.48 (33.62)	41.98 (17.06)	14.49 (17.63)	-4.56 (10.68)	-17.5 (4.96)
Texas (TX)	QALY	1.61 (0.1)	1.6 (0.18)	1.67 (0.2)	1.68 (0.19)	1.4 (0.03)	1.42 (0.09)	1.46 (0.07)	1.46 (0.22)	1.28 (0.18)	1.31 (0.15)	1.35 (0.14)	1.33 (0.12)
	Cost	-89.95 (0.9)	-137.24 (0.72)	-164.56 (0.91)	-175.28 (1.85)	-28.99 (1.03)	-75.32 (0.37)	-100.33 (0.86)	-108.87 (1.01)	19.97 (1.62)	-13.32 (1.04)	-36.46 (1.58)	-46.08 (2.56)

Notion: moving from scenarios 1 to 3, a higher percentage of people who would not go out (under no intervention) would lose their income.

Observation 1: there is little to no change in the QALY saved when the proportion of people losing income (when no going out) increases (e.g., scenario 3 compared to scenarios 1-2). Exception: MA/TX (decı

Observation 2: the extra cost would be higher when the proportion of people losing income (when no going out) increases (e.g., scenario 3 compared to scenarios 1-2). Exception: NY (curvilinear trend).

Table E.6 Robustness check: % quarantine (shaded area represents the results under the baseline scenario)
Avg (std dev) of outcomes compared to no-intervention per 100K capita
Outcomes: QALY gained (1,000 years) and extra cost ($ million)

State	Outcome	Scenario: % quarantine among infected people (γ = 0.25)				Scenario: % quarantine among infected people (γ = 0.50)				Scenario: % quarantine among infected people (γ = 0.75)			
		Policies				Policies				Policies			
		Current	P1	P2	P3	Current	P1	P2	P3	Current	P1	P2	P3
Arizona (AZ)	QALY	0.55 (0.03)	1.22 (0.02)	1.33 (0.05)	1.36 (0.04)	0.6 (0.04)	1.29 (0.04)	1.41 (0.03)	1.44 (0.08)	0.61 (0.04)	1.35 (0.09)	1.43 (0.09)	1.46 (0.04)
	Cost	-49.72 (1.01)	-72.06 (1.54)	-93.42 (1.74)	-104.93 (1.73)	-44.52 (1.4)	-68 (0.52)	-91.39 (0.72)	-99.11 (1.23)	-52.33 (1.55)	-73.62 (1.33)	-95.77 (0.74)	-100.04 (0.47)
California (CA)	QALY	27.74 (4.03)	26.89 (1.08)	26.99 (3.86)	27.03 (3.65)	26.53 (3.51)	26.1 (3.76)	26.48 (3.59)	26.71 (2.95)	38.95 (1.53)	37.36 (3.66)	37.95 (5.36)	38.41 (0.77)
	Cost	187.23 (54.81)	182.57 (58.99)	167.73 (75.32)	158.39 (59.65)	192.39 (38.96)	197.9 (17.52)	176.85 (9.9)	167.97 (53.27)	280.49 (71.33)	278.39 (99.26)	272.92 (47.06)	259.65 (77.11)
Georgia (GA)	QALY	36.15 (3.9)	37.18 (5.38)	37.58 (5.53)	38.78 (1.04)	36.07 (2.78)	37.41 (4.21)	38.29 (1.1)	38.89 (2.28)	39.62 (1.61)	42.05 (3.46)	42.72 (2.51)	42.83 (2.23)
	Cost	14.62 (8.3)	-23.46 (20.27)	-47.98 (7.68)	-55.51 (14.07)	20.91 (9.11)	-15.66 (11.25)	-36.03 (15.08)	-43.86 (2.76)	23.31 (21.86)	-9.62 (3.22)	-33.79 (19.49)	-45.47 (14.8)
Maryland (MD)	QALY	30.55 (2.92)	30.77 (1.76)	30.88 (3.69)	31.93 (4.32)	29.48 (0.98)	30.21 (0.59)	30.71 (1.47)	31.03 (0.64)	25.65 (3.15)	25.85 (4.14)	26.71 (0.92)	26.59 (3.6)
	Cost	-21.2 (10.48)	-64.11 (22.61)	-100.83 (10.69)	-114.29 (24.6)	-30.33 (12.79)	-68.63 (19.44)	-97.44 (19.51)	-110.45 (13.61)	-24.71 (4.25)	-69.44 (3.39)	-107.66 (7.62)	-117.22 (5.41)
Massachusetts	QALY	107.84 (5.08)	106.46 (0.81)	109.41 (3.36)	110.54 (4.53)	98.47 (3.68)	96.64 (3.56)	99.17 (2.09)	100.97 (4.8)	98.8 (1.91)	98.94 (1.55)	102.84 (2.67)	105.04 (6.08)
(MA)	Cost	3.93 (8.22)	-4.47 (11.33)	-41.48 (17.72)	-56.11 (8.91)	4.34 (12.21)	-6.4 (8.99)	-43.59 (17)	-59.01 (8.52)	20.84 (3.27)	12.9 (17.2)	-17 (13.21)	-33.04 (15.8)
Michigan (MI)	QALY	102.11 (8.51)	106.51 (3.83)	111.53 (8.88)	112.59 (4.95)	97.15 (4.41)	102 (5.2)	105.44 (5.71)	108.23 (9.59)	90.68 (3.47)	95.93 (6.37)	98.5 (1.03)	103.46 (7.4)
	Cost	244.67 (18.53)	239.64 (49.29)	225.04 (113.37)	218.7 (87.68)	344.57 (48.72)	349.17 (54.16)	337.33 (57.16)	334.15 (65.37)	200.51 (56.92)	198.86 (20.17)	185.7 (20.5)	182.44 (46.79)
New York (NY)	QALY	140.05 (2.63)	144.64 (4.8)	146.97 (5.17)	153.82 (7.14)	132.22 (0.82)	138.6 (5.84)	139.57 (7.46)	145.51 (2.42)	135.5 (6.92)	137.94 (3.29)	142.34 (2.65)	146.66 (3.58)
	Cost	1251.31 (53.84)	301.34 (171.58)	374.58 (156.41)	1339 (137.75)	1169.6 (234.66)	1220.65 (34.73)	1251.44 (99.75)	292.53 (133.89)	970.18 (146.92)	976.97 (237.29)	966.35 (70.96)	391.67 (242.92)
Pennsylvania	QALY	65.71 (1.57)	66.79 (2.16)	67.96 (5.27)	69.23 (4.66)	73.16 (4.1)	75.71 (3.52)	76.98 (2.51)	78.02 (7.78)	65.84 (5.9)	69.41 (5.33)	70.34 (5.74)	71.61 (1.35)
(PA)	Cost	26.22 (12.61)	-2.33 (6.52)	-28.11 (44.78)	-39.58 (15.7)	21 (5.41)	-12.94 (40.24)	-35.49 (9.62)	-43.48 (33.62)	-13.89 (6.96)	-58.24 (1.72)	-88.53 (9.64)	-99.97 (6.08)
Texas (TX)	QALY	1.6 (0.08)	1.59 (0.28)	1.66 (0.18)	1.65 (0.23)	1.4 (0.03)	1.42 (0.09)	1.46 (0.07)	1.46 (0.22)	0.97 (0.1)	0.97 (0.1)	1.03 (0.08)	1.03 (0.11)
	Cost	-28.43 (1.67)	-74.69 (0.56)	-99.64 (2.35)	-106.18 (2.1)	-28.99 (1.03)	-75.32 (0.37)	-100.33 (0.86)	-108.87 (1.01)	-28.54 (0.21)	-72.45 (1.63)	-98.68 (0.27)	-104.57 (2.26)

Notion: moving from scenarios 1 to 3, a higher percentage of infected individuals would quarantine.

Observation 1: we observe mixed results on the impact of scenarios 1-3 on the QALY saved: AZ/GA/PA (little to no impact), NY (curvilinear trend), MD/MA/MI/TX (decreasing trend), and CA (increasing tr

Observation 2: we observe mixed results on the impact of scenarios 1-3 on the extra cost: AZ/MD/TX (little to no impact), MI/NY/PA (decreasing trend), and CA/GA/MA (increasing trend).

Table E.7 Robustness check: hospitals' capacity (shaded area represents the results under the baseline scenario)
Avg (std dev) of outcomes compared to no-intervention per 100K capita
Outcomes: QALY gained (1,000 years) and extra cost ($ million)

Pennsylvania	Outcome	Scenario: hospital capacity of resources (50% of baseline)				Scenario: hospital capacity of resources (baseline)				Scenario: hospital capacity of resources (150% of baseline)			
		Policies				Policies				Policies			
		Current	P1	P2	P3	Current	P1	P2	P3	Current	P1	P2	P3
Arizona (AZ)	QALY	0.67 (0.02)	1.44 (0.02)	1.54 (0.08)	1.62 (0.06)	0.6 (0.04)	1.29 (0.04)	1.41 (0.03)	1.44 (0.08)	0.56 (0.01)	1.2 (0.08)	1.28 (0.01)	1.33 (0.03)
	Cost	-50.9 (1.6)	-72.29 (0.75)	-91.86 (0.22)	-102.78 (1.95)	-44.52 (1.4)	-68 (0.52)	-91.39 (0.72)	-99.11 (1.23)	-49.34 (0.52)	-71.11 (1.59)	-94.88 (1.28)	-102.51 (0.81)
California (CA)	QALY	27.05 (2.99)	25.98 (3.62)	26.94 (1.71)	27.02 (3.91)	26.53 (3.51)	26.1 (3.76)	26.48 (3.59)	26.71 (2.95)	27.55 (3.67)	27.25 (1.35)	26.95 (1.36)	27.14 (0.67)
	Cost	180.75 (12.89)	193.28 (54.01)	174.86 (51.61)	169.69 (61.75)	192.39 (38.96)	197.9 (17.52)	176.85 (9.9)	167.97 (53.27)	129.66 (36.73)	132.4 (23.84)	112.3 (19.18)	110.49 (5.92)
Georgia (GA)	QALY	38.5 (1.11)	39.83 (5.13)	40.62 (5.57)	40.54 (5.15)	36.07 (2.78)	37.41 (4.21)	38.29 (1.1)	38.89 (2.28)	32.94 (0.68)	33.52 (5.36)	34.99 (4.47)	35.13 (4.56)
	Cost	14.86 (5.21)	-22.51 (7.87)	-47.41 (16.67)	-58.1 (7.24)	20.91 (9.11)	-15.66 (11.25)	-36.03 (15.08)	-43.86 (2.76)	23.36 (18.55)	-9.31 (25.76)	-33.34 (20.67)	-42.45 (31.83)
Maryland (MD)	QALY	31.93 (1.94)	32.41 (0.65)	33.05 (4.72)	32.98 (3.09)	29.48 (0.98)	30.21 (0.59)	30.71 (1.47)	31.03 (0.64)	24.67 (3.18)	24.73 (0.79)	25.57 (2.21)	25.6 (0.65)
	Cost	-13.97 (17.14)	-64.3 (19.03)	-99.48 (21.23)	-111.95 (21.92)	-30.33 (12.79)	-68.63 (19.44)	-97.44 (19.51)	-110.45 (13.61)	-35.98 (14.99)	-81.75 (6.04)	-118.09 (7.92)	-130.01 (4.09)
Massachusetts	QALY	102.24 (3.54)	102.05 (3.64)	107.51 (3.86)	110.29 (2.3)	98.47 (3.68)	96.64 (3.56)	99.17 (2.09)	100.97 (4.8)	100.6 (3.35)	99.84 (1.47)	101.91 (0.68)	104.41 (1.86)
(MA)	Cost	13.62 (6.01)	6.1 (16.14)	-26.45 (13.78)	-41.78 (17.46)	4.34 (12.21)	-6.4 (8.99)	-43.59 (17)	-59.01 (8.52)	8.82 (7.62)	1.42 (10.06)	-31.13 (16.33)	-44.66 (20.27)
Michigan (MI)	QALY	110.33 (4.71)	113.04 (8.27)	118.41 (8.87)	123.37 (4.81)	97.15 (4.41)	102 (5.2)	105.44 (5.71)	108.23 (9.59)	91.76 (3.3)	97.65 (1.36)	97.55 (2.42)	100.27 (7.79)
	Cost	361.98 (26.19)	366.12 (37.89)	344.76 (120.31)	345.99 (39.34)	344.57 (48.72)	349.17 (54.16)	337.33 (57.16)	334.15 (65.37)	229.46 (105.74)	234.61 (90.06)	223.95 (98.21)	213.81 (117.66)
New York (NY)	QALY	141.1 (2.75)	145.12 (2.1)	153.34 (7.74)	157.96 (1.26)	132.22 (0.82)	138.6 (5.84)	139.57 (7.46)	145.51 (2.42)	132.44 (2.78)	140.65 (2.86)	145.6 (2.93)	146.34 (6.94)
	Cost	232.53 (260.45)	247.01 (237.16)	242.11 (285.58)	284.76 (224.53)	1169.6 (234.66)	1220.65 (34.73)	1251.44 (99.75)	292.53 (133.89)	1234.74 (235.4)	1249.55 (84.87)	292.98 (156.39)	1261.37 (93.95)
Pennsylvania	QALY	67.35 (2.38)	68.67 (4.86)	70.33 (5.02)	69.05 (4.82)	73.16 (4.1)	75.71 (3.52)	76.98 (2.51)	78.02 (7.78)	63.4 (1.43)	66.32 (1.04)	67.59 (3.44)	67.84 (2.4)
(PA)	Cost	19.42 (36.71)	-11.98 (18.88)	-40.04 (32.4)	-51.28 (29.64)	21 (5.41)	-12.94 (40.24)	-35.49 (9.62)	-43.48 (33.62)	7.61 (17.69)	-28.73 (10.89)	-56.09 (36.25)	-64.48 (8.55)
Texas (TX)	QALY	1.32 (0.18)	1.37 (0.2)	1.39 (0.12)	1.39 (0.09)	1.4 (0.03)	1.42 (0.09)	1.46 (0.07)	1.46 (0.22)	1.3 (0.19)	1.33 (0.1)	1.38 (0.21)	1.43 (0.1)
	Cost	-27.78 (0.95)	-72.39 (0.29)	-95.24 (0.93)	-105.83 (1.59)	-28.99 (1.03)	-75.32 (0.37)	-100.33 (0.86)	-108.87 (1.01)	-30.92 (1.14)	-76.36 (1.16)	-102.81 (1.74)	-112.79 (0.47)

Notion: moving from scenarios 1 to 3, the number of hospital resources would increase.

Observation 1: there is little to no change in the QALY saved when the number of hospital resources increases (e.g., scenario 3 compared to scenarios 1-2). Exception: MI (decreasing trend).

Observation 2: we observe mixed results on the impact of scenarios 1-3 on the extra cost: AZ/NY/TX (little to no impact), MA/PA (curvilinear trend), CA/MD/MI (decreasing trend), and GA (increasing trend

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