

# COVID-19 Cost Scenario Modeling: Treatment

*Estimating the Cost of COVID-19 Treatment for U.S. Private Insurer Providers*

America's Health Insurance Plans

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## Introduction

The COVID-19 pandemic has had an extraordinary, unprecedented, and severe impact on virtually all aspects of life in the United States. As significant an impact as the virus has already had in several countries around the world, and in several states, the future impact of continued virus proliferation could be immense.

Given the potential for broad infection and a significant increase in associated hospitalizations in the United States, America's Health Insurance Plans ("AHIP") retained Wakely Consulting Group ("Wakely") to explore the potential COVID-19 ("COVID") treatment cost implications to U.S. private insurance providers for 2020 and 2021. Wakely was tasked with modeling potential scenarios of incremental costs associated with COVID treatment in 2020 and 2021 benefit years for private insurers in the United States. These insurance providers include Commercial health insurers, Medicaid managed care organizations ("MMCOs"), and Medicare Advantage Organizations ("MAOs") each of which are governed by different legislative, regulatory and contractual requirements. Our analysis did not specifically contemplate the potential cost to stand-alone Medicare Prescription Drug Plans ("PDPs").

This analysis is an update of the March 30, 2020 report. Since that report was published, new data on both COVID costs, utilization, and deferred care has become available, and has been incorporated into this update. While this new information has improved the analysis, there remain large levels of uncertainty on the ultimate impact of COVID on the United States and particularly the health care industry.

The primary changes from the prior report include the following:

- The overall assumed rates of hospitalization for infected individuals has been reduced to align with recent studies. The rate has also been adjusted for age and morbidity differences by line of business.
- The estimated unit cost of a hospital admission has been increased based on survey data provided by AHIP members.
- An estimated impact of deferred care on overall healthcare spend was included and combined with the COVID treatment costs to arrive at a combined impact on cost of care by line of business.

The first two changes are related specifically to the cost of COVID treatment and mostly offset each other at the high end of the cost range, but the changes did decrease the low end of the range of estimates. Our previous report estimated the direct impact of COVID treatment costs to be between \$56 and \$556 billion, while the updated analysis estimates costs of \$30 to \$547

billion.<sup>1</sup> Incorporating deferred care with the treatment costs generally decreases the overall impact to insurers, resulting in a total impact of between -\$76 and \$216 billion for 2020 and 2021 combined.

This document has been prepared for the sole use of AHIP. Wakely understands that the report may be made public. This document contains the results, data, assumptions, and methods used in our analyses and satisfies Actuarial Standard of Practice (ASOP) 41 reporting requirements. Using the information in this report for other purposes may not be appropriate.

The opinions and estimates included in this report are those of the authors and may not represent those of others at Wakely. Actual results will differ, potentially significantly, from the estimates in this report.

## Executive Summary

The estimated costs of COVID-19 treatment for private insurers range from \$30.0 to \$546.6 billion over the two-year time period. Enrollees or beneficiaries in private insurers out of pocket expenses could be between \$2.8 billion and \$48.6 billion of the costs.<sup>2</sup> For each infection scenario outlined, a range of assumptions was modeled for hospitalization rates, costs per utilizing member for each COVID service, and the impact of deferred care.

Considering the longer duration of our analysis period (2020 and 2021), we explored a wide range of potential infection rates. For purposes of this paper the overall infection rate, or the percent of the total population infected, refers to the total percent of the population infected, regardless of a positive test, over a two year period. Based on published epidemiological studies<sup>3</sup>, we modeled infection rates ranging from 20% to 60% of the population. We also modeled a 10% infection rate, which reflects half the lower bound of infection rates in published studies, to explore a scenario in which effective interventions drastically mitigate exposure versus unchecked virus proliferation.

While the true infection rate, as of May 18, is unknown, some projections estimate the true infection rate of the US at around 3.5%.<sup>4</sup> Consequently, a 10% infection scenario represents a scenario in which there is an ongoing infection in both 2020 and 2021 but without significant spikes. A 20% scenario represents a scenario in which there is ongoing infections and a small spike on par with recent experiences that occurs starting in the fall of 2020 and carrying over into 2021. The 60% scenario represents a scenario in which there is not only ongoing infections but

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<sup>1</sup> Testing is only included in this report's treatment estimates to the extent it is implicit in the treatment of COVID-19 patients in an inpatient or outpatient setting. The potential costs associated with broader testing are not included in this analysis.

<sup>2</sup> Wakely did not include the effects of insurers voluntarily waiving treatment cost-sharing or current requirements in certain states.

<sup>3</sup> See Appendix A for the list of sources used in the analysis.

<sup>4</sup> <https://covid19-projections.com/#view-projections> (accessed on May 18, 2020)

also a spike in the fall of 2020 that is larger than the US has experienced to date, with some of the large spike affecting 2021. Wakely did not include a scenario in which either a vaccine mitigates infections in 2021 or a scenario in which continued large scale infections occur throughout 2021. Wakely did not analyze the probability of each of the scenarios occurring, but did consider the scenarios selected to be reasonably possible outcomes.

Table 1A presents the estimated range of total allowed costs<sup>5</sup> by infection rate scenario for 2020, 2021, and over the two years combined. The percent impact on the overall cost of care is also included.

**Table 1A – Estimated Range of Total COVID Associated Treatment Costs  
2020 and 2021 (in billions of dollars)**

Scenario	2020 Total Allowed Cost	2021 Total Allowed Cost	2020-2021 Total Allowed Cost	2020-2021 Total Member Cost Sharing
Low Infection Rate 10%	\$22.1 to \$67.9	\$7.9 to \$24.2	\$30.0 to \$92.0	\$2.8 to \$8.1
% Cost of Care	1.3% to 3.9%	0.4% to 1.3%	0.8% to 2.5%	n/a
Baseline Infection Rate 20%	\$44.6 to \$135.2	\$15.6 to \$47.0	\$60.2 to \$182.2	\$5.6 to \$16.2
% Cost of Care	2.5% to 7.7%	0.8% to 2.5%	1.7% to 5.0%	n/a
High Infection Rate 60%	\$133.6 to \$404.6	\$46.5 to \$142.1	\$180.0 to \$546.6	\$16.6 to \$48.6
% Cost of Care	7.6% to 23.0%	2.5% to 7.6%	5.0% to 15.1%	n/a

While the cost of diagnostic testing is implicit in our inpatient and outpatient assumptions for those infected, we have not included the potential for large scale testing costs into the model. Several pieces of research have called for large scale population testing to limit the spread of the virus.

Despite the additional direct costs due to COVID, insurers have seen a reduction in non-COVID claims costs so far in 2020 as many individuals have deferred care, whether because of formal governmental rules or because of concerns over the virus. Wakely has included estimates of the level of deferred care (Table 1B), with the assumption that increases in deferred care will correlate with increases in the infection rate. Deferred care refers to change in expenditures for non-COVID care.

For 2020 we assumed that some level of care would be delayed as a result of the pandemic, with some of the care being made up in 2020, some of the care being made up in 2021, and some of

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<sup>5</sup> For purposes of this paper, total allowed costs refers to the sum of plan liability (i.e. plan paid amount) and member cost sharing, incurred in the stated year.

the care foregone. For 2021, we assumed some level of care would be deferred in 2021, with some of it being made up in 2021, and some of it foregone. The potential for some care being deferred from 2020 to 2021 in combination with additional deferred care in 2021 could result in either lower or higher claims costs, all else equal, depending on the amount of care made up and the timing of that care.

**Table 1B – Estimated Range of Deferred Care Costs and Impact on Cost of Care 2020 and 2021 (in billions of dollars)**

Scenario	2020 Total Allowed Cost	2021 Total Allowed Cost	2020-2021 Total Allowed Cost
Low Infection Rate 10%	-\$42.3	-\$25.2 to \$11.9	-\$67.6 to -\$30.4
% Cost of Care	-2.4%	-1.4% to 0.7%	-1.9% to -0.8%
Baseline Infection Rate 20%	-\$145.8	-\$22.6 to \$14.6	-\$168.4 to -\$131.2
% Cost of Care	-8.3%	-1.3% to 0.8%	-4.6% to -3.6%
High Infection Rate 60%	-\$285.9	-\$44.6 to \$29.8	-\$330.5 to -\$256.1
% Cost of Care	-16.2%	-2.5% to 1.7%	-9.1% to -7.1%

Finally, in Table 1C Wakely displays the overall estimated impact of COVID, including both the treatment costs and the effects of deferred care. Given that our base assumption is that the level of deferred care increases as the number of individuals infected increases we created reasonable scenarios that combined direct COVID costs with changes in non-COVID utilization as a result of deferred care.

**Table 1C – Estimated Range of Combined COVID Treatment Costs and Deferred Care Impact 2020 and 2021 (in billions of dollars)**

Scenario	2020 Total Allowed Cost	2021 Total Allowed Cost	2020-2021 Total Allowed Cost
Low Infection Rate 10%	-\$20.2 to \$25.6	-\$11.7 to \$26.9	-\$16.2 to \$26.4
% Cost of Care	-1.1% to 1.5%	-0.7% to 1.5%	-0.4% to 0.7%
Baseline Infection Rate 20%	-\$101.2 to -\$10.6	\$3.6 to \$44.2	-\$71.0 to \$13.8
% Cost of Care	-5.7% to -0.6%	0.2% to 2.5%	-2.0% to 0.4%
High Infection Rate 60%	-\$152.3 to \$118.7	\$34.6 to \$118.1	-\$76.1 to \$216.1
% Cost of Care	-8.6% to 6.7%	2.0% to 6.7%	-2.1% to 6.0%

We acknowledge the astonishingly broad range of potential outcomes, in total, by geographic region within the United States, and by health insurance line of business. Our analyses rely, in part, on rapidly evolving and diverse data sets and epidemiological studies from around the world. Wide variation in variables such as data quality, testing availability and prioritization protocol,

demographics, smoking incidence, timing, and comprehensiveness of intervention measures (e.g. social distancing, lockdowns, etc.), reported hospitalization rates and lengths of stay, hospitalizations requiring intensive care unit (“ICU”) services, health care system capacity and labor/supply constraints, the availability and efficacy of temporary health care facilities, and case fatality rates by country/region, to name a few, make it impractical to put forth precise cost projections over two years.

Importantly, our modeling was performed based on emerging data and information available to us as of May 10, 2020. Considering the extraordinary pace at which available data is evolving and changing, there is potential that analysis performed later could yield material updates to the scenario estimates detailed herein.

Recognizing all of the modeling challenges, we have compiled, for a wide range of assumed infection rates, estimates of the potential COVID-19-related treatment costs for U.S. private insurers operating in the Commercial, Medicare Advantage, and Medicaid Managed Care lines of business. Costs outside of these lines of business, such as traditional Medicare, stand-alone Part D Prescription Drug Plans, or other lines of business, have not been contemplated in our analysis. Our estimates may also be materially impacted by enrollment shifts across lines of business (e.g. Commercial to Medicaid). We have included sensitivity analyses to illustrate the potential impact of market migration.

To derive cost estimates within each tranche of cases, we compiled utilization and unit cost information from academic analysis as well as survey of a range of treatment cost profiles, including inpatient (IP), outpatient (OP), and other (professional, drug, etc.) costs. Cost estimates reflect allowed costs, which means that any enrollee cost-sharing, if applicable, is included in our estimates.

There are several potentially material variables that have not been explicitly modeled in our analysis. We have not explicitly adjusted cost projections for potential inpatient hospital bed capacity constraints. We assume that a higher volume of COVID related services will be incurred in 2020 and lower volume in 2021, distributing approximately 75% of the total services to 2020 and 25% to 2021. In the higher infection rate scenarios (60%), we acknowledge that the estimated inpatient case incidence figures may exceed local bed capacity (in total and ICU-specific), even after adjusting for emergency capacity expansion (e.g. field hospitals, re-purposing of non-ICU beds to ICU). We have also not modeled long term costs associated with individuals recovering from COVID infections. Finally, Wakely did not include costs for a vaccine, should one be available before the end of 2021.

Some scenarios demonstrate the possibility of lower than expected spending overall, particularly in 2020. Note that insurers providing commercial, Medicare or Medicaid coverage are all subject to medical loss ratio (MLR) requirements. Lower than expected spending in a plan year could

trigger the requirement that insurers send all or a portion of the money saved due to deferred care back to enrollees in the form of rebates.

## Results and Methodology

### COVID-19 Treatment Costs

The following discusses the various scenarios for potential treatment costs associated with COVID on Medicare Advantage organizations, Commercial insurers, and Medicaid MCOs for the 2020 and 2021 benefit years. As discussed, there is inherent and substantial uncertainty to these estimates.

The methodology used in the analysis focused on two drivers of the aggregate incremental cost associated with COVID treatment and diagnosis – (1) medical services utilization rate, given an assumed rate of infection, and (2) cost per medical service by major service category. The product of the two estimates produces aggregate cost for each line of business.

The starting population used in the analysis was sourced from figures published by KFF, CMS, Medicare Advantage enrollment reports, and projected to 2020 and 2021 benefit years using NHE estimates. A small adjustment was made to the number of Medicaid managed care enrollees to remove an estimated number of duals enrollee that would also be enrolled in Medicare Advantage plans, to avoid double-counting of these enrollees in both lines of business. Similarly, Medicare Supplement enrollment was removed from the Commercial data. A further adjustment was made to the enrollment estimates to trend them to 2020 and 2021, based on NHE estimates for those years.

Overall baseline costs were estimated using the National Health Expenditure data<sup>6</sup> and the Medicare Trustee's report<sup>7</sup>. Medicaid MCO costs were assumed to increase at the same rate as the overall Medicaid spending estimated by the NHE. A small adjustment was applied to Medicaid managed care enrollment to remove the estimated number of duals enrollees that would also be enrolled in Medicare Advantage plans, to avoid double-counting of these costs. Medicare Supplement costs were removed from the Commercial data. Overall costs were trended based on NHE estimates to 2020 and 2021.

The medical utilization rate was estimated for a subset of the enrolled population assumed to be infected with COVID using a broad range of assumed rates of infection - 10%, 20% to 60% of the population, with the 20% and 60% scenarios based on published epidemiological studies.<sup>8</sup> The

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<sup>6</sup> <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData>

<sup>7</sup> <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds>

<sup>8</sup> <https://www.nytimes.com/interactive/2020/03/17/upshot/hospital-bed-shortages-coronavirus.html>



assumed rate of infection was applied uniformly to all age categories. Given the rapidly evolving nature of the pandemic and data limitations, exposure to COVID-19 was assumed to be equally likely in any demographic cohort. In addition to the portion of members infected, utilization scenarios were developed based on how many infected members would have hospital and non-hospital services, and what year the utilization would occur.

The estimated rate of hospitalizations and the rate of ICU admissions by age group was based on several data sets. The overall rate of hospitalization was estimated using two sources, a low estimated of 1.9%, based on analysis from Brookings<sup>9</sup>, and a high estimate based on work published by Verity et al of 5.5%.<sup>10</sup> The Brookings analysis was based on New York data while the Verity et al analysis was based on data from China. There is significant levels of uncertainty as to what the true hospitalization rate is. First, there is uncertainty around the data, given limited testing and the ability for individuals with the disease to be properly captured (i.e., coded) in the data. Secondly, even if data is complete there is uncertainty if hospitalization patterns observed in New York or China can be generalized over the next two years. For example, there is uncertainty around practice patterns (i.e., propensity of individuals to be admitted to inpatient settings). There is also uncertainty surrounding individual behavior (i.e., propensity of individuals to go to providers if they contract COVID).

While we acknowledge that other estimates and ranges of hospitalization rates are possible we used the best estimates of both pieces to create a range of potential hospitalization rates. A midpoint of the two estimates was used for a medium hospitalization rate scenario. Separately, hospitalization rates by age group were estimated based on data released by the Centers for Disease Control and Prevention (“CDC”).<sup>11</sup> <sup>12</sup> Finally, the hospitalization rate by line of business was altered to account for the higher number of health conditions, which are associated with an increased risk of hospitalization. Wakely increased the rate of hospitalizations for Medicaid and Medicare and decreased it for Commercial, holding constant demographics, in line with the adjustments made by Brookings.<sup>13</sup> All of the factors were combined to arrive at the targeted overall hospitalization rate, which varied by age and line of business. This produced

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<sup>9</sup> <https://www.brookings.edu/research/estimating-potential-spending-on-covid-19-care/>

<sup>10</sup> [https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(20\)30243-7/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30243-7/fulltext)

<sup>11</sup> Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19) — United States, February 12–March 16, 2020. MMWR Morb Mortal Wkly Rep. ePub: 18 March 2020.

DOI: [http://dx.doi.org/10.15585/mmwr.mm6912e2external icon](http://dx.doi.org/10.15585/mmwr.mm6912e2external%20icon).

<sup>12</sup> [https://www.cdc.gov/mmwr/volumes/69/wr/mm6915e3.htm?s\\_cid=mm6915e3\\_w](https://www.cdc.gov/mmwr/volumes/69/wr/mm6915e3.htm?s_cid=mm6915e3_w)

<sup>13</sup> <https://www.brookings.edu/research/estimating-potential-spending-on-covid-19-care/>

hospitalization rates were significantly higher for Medicare and lowest for Commercial. The portion of hospitalizations that are in an ICU environment was derived from CDC data.<sup>14</sup>

The number of utilizers of outpatient facility services was modeled as 60% of positive cases less than the number of hospitalized cases. The 60% estimate was based on published research that reported that a portion of COVID cases are asymptomatic as well as some individuals with mild or moderate symptoms who would not seek care<sup>15</sup>

The estimated average cost per service was modeled using a survey of AHIP members collected on May 13. There were 21 respondents, representing 16% of Medicare Advantage enrollment, 42% of Commercial enrollment, and 34% of Medicaid MCO enrollment. Each respondent answered questions on the average cost of inpatient non-ICU, inpatient ICU, outpatient, and additional other costs for COVID treatment for each line of business. There was a range of answers from the survey results. Wakely weighted the cost of service by the frequency of the response to produce an average cost for each service, by line of business. Tables 2A and 2B present the range of utilization and cost per utilizer assumptions by line of business for the various scenarios.

**Table 2A – Utilization and Cost per Utilizer: Low Assumption Scenarios  
2020 and 2021 Combined**

Assumption	Medicare Advantage	Commercial (Group + Non-Group)	Medicaid MCO
Total Enrollees	24,480,000	176,695,000	54,180,000
Total Number Infected (includes those not tested)	2,430,000	17,660,000	5,400,000
<b>Number of Utilizers</b>			
IP Hospital Services	140,000	220,000	120,000
Non-ICU	90,000	150,000	90,000
ICU	50,000	70,000	30,000
OP Hospital Services	1,030,000	9,960,000	2,890,000
All Other Services	1,460,000	10,590,000	3,240,000
<b>Cost per Utilizer</b>			
IP Hospital Cost			
Non-ICU	\$10,000	\$20,000	\$8,000
ICU	\$30,000	\$61,000	\$30,000

<sup>14</sup> Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19) — United States, February 12–March 16, 2020. MMWR Morb Mortal Wkly Rep. ePub: 18 March 2020. DOI: <http://dx.doi.org/10.15585/mmwr.mm6912e2external> icon.

<sup>15</sup> There remains large levels of uncertainty on the true percent of infection individuals that remain asymptomatic. For purposes of this paper we relied on <https://www.nejm.org/doi/full/10.1056/NEJMoa2006100>

Assumption	Medicare Advantage	Commercial (Group + Non-Group)	Medicaid MCO
OP Hospital Cost	\$600	\$1,000	\$300
All Other Services	\$300	\$500	\$200

**Table 2B – Utilization and Cost per Utilizer: High Assumption Scenarios 2020 and 2021 Combined**

Assumption	Medicare Advantage	Commercial (Group + Non-Group)	Medicaid MCO
Total Enrollees	24,480,000	176,695,000	54,180,000
Total Number Infected (includes those not tested)	14,590,000	105,920,000	32,400,000
<b>Number of Utilizers</b>			
IP Hospital Services	2,590,000	3,780,000	2,100,000
Non-ICU	1,640,000	2,670,000	1,510,000
ICU	950,000	1,110,000	590,000
OP Hospital Services	7,870,000	62,240,000	18,730,000
All Other Services	8,750,000	63,560,000	19,450,000
<b>Cost per Utilizer</b>			
IP Hospital Cost			
Non-ICU	\$20,000	\$30,000	\$15,000
ICU	\$51,000	\$101,000	\$50,000
OP Hospital Cost	\$1,000	\$2,050	\$700
All Other Services	\$700	\$1,000	\$500

Included in the various scenarios is a “baseline” estimate. Table 3 presents a summary of key population and utilization assumptions by line of business for the baseline scenario (20% infection rate with medium hospitalization rate estimate) including the assumed number of enrollees assumed to be infected, the portion of the infected enrollees assumed to be seeking care, and key utilization and cost per utilizer assumptions by line of business for the baseline scenario including the expected number of enrollees hospitalized (split between ICU and non-ICU hospitalization), number of enrollees seeking outpatient hospital services, and other covered services.

**Table 3 – Utilization and Cost per Utilizer: Baseline 20% Infection Rate Scenario  
2020 and 2021**

Assumption	Medicare Advantage	Commercial (Group + Non-Group)	Medicaid MCO	Total
Total enrollees	24,480,000	176,695,000	54,180,000	255,355,000
Total Number Infected (includes those not tested)	4,860,000	35,310,000	10,800,000	50,970,000
<b>Number of Utilizers</b>				
IP Hospital Services	570,000	850,000	480,000	1,900,000
Non-ICU	360,000	600,000	350,000	1,310,000
ICU	210,000	250,000	130,000	590,000
OP Hospital Services	2,340,000	20,340,000	6,010,000	28,690,000
All Other Services	2,920,000	21,190,000	6,490,000	30,600,000
<b>Cost per Utilizer</b>				
IP Hospital Cost				
Non-ICU	\$15,000	\$25,000	\$10,000	\$18,000
ICU	\$40,000	\$81,000	\$40,000	\$57,000
OP Hospital Cost	\$1,000	\$1,500	\$500	\$1,250
All Other Services	\$500	\$750	\$250	\$600

The baseline scenario produces treatment costs of \$113.5 billion over the two-year period, of which \$17.9, \$82.3, and \$13.4 relate to Medicare, Commercial, and Medicaid, respectively.

### Sensitivity Testing – Rate of Infection

Tables 4A-C present summary of aggregate allowed costs by line of business and major service category for each selected infection rate scenario (10/20/60%). The range was selected to represent a range of potential disease incidence from a number of published studies and research, which ranged anywhere from 20% to 80%.<sup>16</sup> This range is meant to be representative of plausible future scenarios with higher and lower success rates of the infection mitigation mechanisms that are currently being put in place (i.e., social distancing, stay-at-home orders, availability of personal protective equipment to health care workers, etc.). The range includes, for

<sup>16</sup> Ferguson, N et al. Report 9: Impact of non-pharmaceutical interventions (NPIs) to reduce COVID19 mortality and healthcare demand. DOI: <https://doi.org/10.25561/77482>. 16-Mar-2020. Medical Research Council (MRC). Kissler S.M. et al. Projecting the transmission dynamics of SARS-CoV-2 through the post-pandemic Period. 04-Mar-2020. Department of Epidemiology, Harvard. T.H. Chan School of Public Health, Boston, MA, USA

each infection scenario, a range of hospitalization rates and a range of potential unit costs derived from the AHIP survey. The result is an overall range of costs per infection rate scenario.

**Table 4A –Total Treatment Costs by Line of Business: 10% Infection Rate Scenario  
2020 and 2021 (allowed costs in billions of dollars)**

Service Category	Medicare Advantage	Commercial (Group + Non-Group)	Medicaid MCO	Total
IP Hospital Services	\$2.4 to \$13.6	\$7.3 to \$32.6	\$1.6 to \$9.3	\$11.4 to \$55.4
OP Hospital Services	\$0.6 to \$1.3	\$10.1 to \$21.0	\$0.9 to \$2.2	\$11.6 to \$24.5
All Other Services	\$0.4 to \$1.0	\$5.3 to \$10.7	\$0.6 to \$1.6	\$6.4 to \$13.4
<b>Total</b>	<b>\$3.7 to \$15.7</b>	<b>\$23.1 to \$63.5</b>	<b>\$3.2 to \$12.9</b>	<b>\$30.0 to \$92.0</b>
<b>% Cost of Care</b>	<b>0.6% to 2.5%</b>	<b>0.9% to 2.6%</b>	<b>0.6% to 2.3%</b>	<b>0.8% to 2.5%</b>

**Table 4B – Total Treatment Costs by Line of Business: Baseline 20% Infection Rate Scenario  
2020 and 2021 (allowed costs in billions of dollars)**

Service Category	Medicare Advantage	Commercial (Group + Non-Group)	Medicaid MCO	Total
IP Hospital Services	\$5.3 to \$26.9	\$14.2 to \$64.4	\$3.5 to \$17.7	\$22.9 to \$109.0
OP Hospital Services	\$1.3 to \$2.7	\$20.2 to \$42.0	\$1.7 to \$4.4	\$23.2 to \$49.0
All Other Services	\$0.9 to \$2.1	\$10.6 to \$21.5	\$1.3 to \$3.2	\$12.8 to \$26.8
<b>Total</b>	<b>\$7.8 to \$31.0</b>	<b>\$45.8 to \$126.2</b>	<b>\$6.6 to \$25.0</b>	<b>\$60.2 to \$182.2</b>
<b>% Cost of Care</b>	<b>1.3% to 5.0%</b>	<b>1.9% to 5.2%</b>	<b>1.2% to 4.4%</b>	<b>1.7% to 5.0%</b>

**Table 4C – Total Treatment Costs by Line of Business: 60% Infection Rate Scenario  
2020 and 2021 (allowed costs in billions of dollars)**

Service Category	Medicare Advantage	Commercial (Group + Non-Group)	Medicaid MCO	Total
IP Hospital Services	\$15.8 to \$81.4	\$42.3 to \$193.2	\$10.2 to \$52.3	\$68.3 to \$326.9
OP Hospital Services	\$3.8 to \$8.0	\$60.5 to \$126.0	\$5.2 to \$13.1	\$69.5 to \$147.1
All Other Services	\$2.6 to \$6.2	\$31.8 to \$64.4	\$3.9 to \$9.7	\$38.3 to \$80.3
<b>Total</b>	<b>\$23.2 to \$93.9</b>	<b>\$137.1 to \$378.6</b>	<b>\$19.7 to \$74.2</b>	<b>\$180.0 to \$546.6</b>
<b>% Cost of Care</b>	<b>3.8% to 15.3%</b>	<b>5.6% to 15.5%</b>	<b>3.5% to 13.1%</b>	<b>5.0% to 15.1%</b>

The estimated range of potential costs was from \$30.0 to \$546.6 billion over the two-year time period. Table 5 presents the estimated range of total allowed costs in 2020, 2021, and over the two years combined by infection rate scenario. We assumed that a higher volume of COVID related services would be incurred in 2020 and lower volume in 2021, as the virus footprint is reduced through infection mitigation mechanisms already in place in many states. Hence, we distributed 75% of the total services to 2020 and 25% to 2021. As a result, particularly in the higher infection rate scenarios, the inpatient ICU hospital bed day capacity<sup>17</sup> may be reached, but we have not dampened cost estimates for this phenomenon.

**Table 5 – Estimated Range of Total COVID Associated Treatment Costs  
2020 and 2021 (in billions of dollars)**

Scenario	2020 Total Allowed Cost	2021 Total Allowed Cost	2020-2021 Total Allowed Cost
Low Infection Rate 10%	\$22.1 to \$67.9	\$7.9 to \$24.2	\$30.0 to \$92.0
% Cost of Care	1.3% to 3.9%	0.4% to 1.3%	0.8% to 2.5%
Baseline Infection Rate 20%	\$44.6 to \$135.2	\$15.6 to \$47.0	\$60.2 to \$182.2
% Cost of Care	2.5% to 7.7%	0.8% to 2.5%	1.7% to 5.0%
High Infection Rate 60%	\$133.6 to \$404.6	\$46.5 to \$142.1	\$180.0 to \$546.6
% Cost of Care	7.6% to 23.0%	2.5% to 7.6%	5.0% to 15.1%

<sup>17</sup> American Hospital Association Fast Facts (2018). <https://www.aha.org/statistics/fast-facts-us-hospitals>. Total inpatient hospital beds in the U.S. was 924,107. In calculating the hospital bed utilization in each scenario, we assumed 4 days per non ICU admission and 14 days per ICU admission based on 50<sup>th</sup> and 90<sup>th</sup> percentiles of length of stay in the IBM's MarketScan database, respectively.

## Enrollee Cost Sharing

For the target services with diagnoses most closely related to COVID-19, we have summarized average enrollee cost-sharing per service by service category from the two claim databases' historical experience. We assumed zero cost-sharing for Medicaid MCO enrollees, assuming that most states take up extra FMAP funding as stipulated in the Families First bill<sup>18</sup>. Based on historical COVID-like claims, we estimated the enrollee cost-sharing portion to be around 10% of annual allowed costs for Medicare Advantage and Commercial and 0% for Medicaid. The range of potential enrollee cost-sharing across all scenarios was between \$2.8 and \$48.6 billion dollars. Table 6 presents this information by scenario.

**Table 6 – Estimated Range of Total COVID Treatment Costs and Enrollee Cost Sharing 2020 and 2021 (in billions of dollars)**

Scenario	2020-2021 Total Allowed Costs	2020-2021 Total Enrollee Cost Sharing
Low Infection Rate 10%	\$30.0 to \$92.0	\$2.8 to \$8.1
Baseline Infection Rate 20%	\$60.2 to \$182.2	\$5.6 to \$16.2
High Infection Rate 60%	\$180.0 to \$546.6	\$16.6 to \$48.6

## Additional Scenario Testing

In addition to the main findings, Wakely conducted sensitivity analyses on two issues: market migration and shifts in the timing of the infections between 2020 and 2021. Since the COVID pandemic began, tens of millions of Americans have filed for unemployment. If unemployment levels remain elevated, millions of Americans with employer-sponsored insurance could migrate to other forms of coverage or become uninsured. To illustrate how this could impact overall spending Wakely relied on recent analysis by the Urban Institute<sup>19</sup> on how the economic downturn could impact spending. Using Urban's 20% unemployment scenario, Wakely shifted individuals from Commercial insurance to Medicaid and uninsured status. The result of this was a decrease of almost 5% of spending to the baseline scenario with no change to Medicare Advantage, a more than 10% decrease to Commercial, and a more than 20% increase to Medicaid. However, this assumes that individuals with Commercial insurance who migrate to Medicaid have a morbidity profile of those currently in Medicaid. It is likely that individuals migrating for employer sponsored insurance are healthier than those currently in Medicaid. Consequently, the previous estimate is likely an overestimate in regards to Medicaid costs. If we were not to apply a morbidity adjustment for those newly enrolled in Medicaid (i.e., assume they have average health) overall spending

<sup>18</sup> <https://ccf.georgetown.edu/wp-content/uploads/2020/03/Families-First-Final-3.25.pdf>

<sup>19</sup> <https://www.urban.org/research/publication/how-covid-19-recession-could-affect-health-insurance-coverage>

would likely decrease an additional 2% or more. While further analysis would be needed to fully account for demographic and morbidity shifts, the overall impact of shifting individuals out of Commercial insurance to other forms of coverage (or uninsured) should directionally reduce overall spending for private insurers.

Another key sensitivity test was the proportion of cases that occur in 2020 relative to 2021. The exact number of cases per year is extremely difficult to estimate. Factors ranging from the legal imposition of social distancing, individual behavior around social distancing, weather patterns, and other factors make precise estimates of the timing of infection rates very difficult to estimate. As an illustrative example, shifting the proportion of individuals who are infected to 2021, such that the two years have an equal number of cases (50%/50%) would result in 2021 costs roughly doubling (with a commensurate decrease in 2020 costs), although overall two year costs do not change dramatically. As will be discussed later, it is likely that deferred care may also increase in 2021 as a result.

Finally, there is a range of potential costs that Wakely did not include. Most notably there is the potential for a vaccine to be ready and distributed at some point during the 2021 benefit year. While the costs of the vaccine are unknown, the costs could be significant. For example, if a cost per inoculation is \$100 and then if a large portion of (40% to 80%) of the population gets vaccinated in 2021, this alone would add over \$10 to \$20 billion to the total cost estimate. We also did not include any long term costs associated with those recovering from COVID. Recent news articles<sup>20</sup> note that there may be long term effects to individuals who were infected by COVID. To the extent to which individuals infected by COVID need long term treatment, costs would be directionally higher than what is estimated in the above tables. Finally, we did not include testing costs beyond what is assumed for COVID treatment. The extent to which testing, for example for public health or return to work reasons, is beyond pure infection scenarios, the costs, if born by insurers, would be an underestimate.

## Deferred Care

Due to various “lockdown” directives, changes in individuals behavior, as well as directives to delay elective and non-emergency procedures, a material portion of non-COVID-19 related services has been and will likely be delayed in 2020 and 2021. We acknowledge that a portion of these deferred services may remain foregone throughout 2020 and 2021. On the other hand,

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<sup>20</sup> [https://www.washingtonpost.com/health/coronavirus-destroys-lungs-but-doctors-are-finding-its-damage-in-kidneys-hearts-and-elsewhere/2020/04/14/7ff71ee0-7db1-11ea-a3ee-13e1ae0a3571\\_story.html](https://www.washingtonpost.com/health/coronavirus-destroys-lungs-but-doctors-are-finding-its-damage-in-kidneys-hearts-and-elsewhere/2020/04/14/7ff71ee0-7db1-11ea-a3ee-13e1ae0a3571_story.html)



delayed services could lead to adverse and costly events associated with the absence of preventive care and poor management of chronic conditions.

To estimate the impact of deferred (and foregone) care on non-COVID claims cost, Wakely relied on survey data from AHIP members on their expectations on the amount of deferred care for 2020 and 2021, the amount of 2020 deferred care that could be made up in each of 2020 and 2021, and the amount of deferred care in 2020 that is ultimately not rescheduled.<sup>21</sup> Wakely assumed that the amount of deferred care and the amount of deferred care that is ultimately made up would be inversely correlated. In other words, the greater the level of deferred care, the less likely all of it would be made up both in 2020 and 2021. Secondly, Wakely assumed that the level of deferred care was positively correlated with the infection rate. In other words, the greater the spread of the virus, the greater the amount of deferred care. Finally, the deferred care assumptions were not assumed to vary by line of business. The result was the following estimates for 2020 deferred care.

**Table 7 – Deferred Care Assumptions for 2020**

Scenario	2020 Percent of Costs Deferred	Portion of Deferred Care Foregone	Portion of Deferred Care Made Up in 2020	Portion of Deferred Care Made Up in 2021
Low Infection Rate 10%	5%	35%	52%	13%
Baseline Infection Rate 20%	10%	45%	33%	22%
High Infection Rate 60%	20%	55%	18%	27%

In addition to 2020 deferred care, additional deferred care assumptions were made for 2021. There may be additional deferred care in 2021 for a variety of reasons, including another “lockdown”, fear of getting services, limits on supplies of protective equipment, etc. Secondly, we assumed that there would be some additional cost in 2021 due to increased acuity as a result of delayed care in 2020 (i.e., enrollees untreated chronic conditions getting worse due to lack of care). Finally, we assumed, particularly for higher infection rate scenarios, that there may be limited capacity to make up care in 2021 due to need to meet the needs of making up deferred care from 2020 and additional deferred care in 2021. For the 10%, 20%, and 60% infection rate scenarios, the impact of 2021 deferred care in 2021 (what is deferred and not made up in 2021) was estimated to be 0% to 2%, 2% to 4%, and 4% to 8%, respectively. These assumptions are based on the expectation that most of the COVID infections occur in 2020 so making up care in 2021 will first go to 2020 deferred care. As a result, it will be harder to make up 2021 deferred care in 2021. Any deferred care that is made up in 2022 is outside the scope of this analysis.

Based on these assumptions, the Table 8 below summarizes the impact of deferred care for the lowest and highest overall impacts. As noted, additional scenarios were developed, specific to each infection assumption, where the impact may vary overall and by year.

**Table 8 – Estimated Range of Deferred Care Costs Due to COVID  
2020 and 2021 (in billions of dollars)**

Scenario	2020 Total Allowed Cost	2021 Total Allowed Cost	2020-2021 Total of Allowed Cost
Low Impact	-\$42.3	\$11.9	-\$30.4
% Cost of Care	-2.4%	0.7%	-0.8%
High Impact	-\$285.9	-\$44.6	-\$330.5
% Cost of Care	-16.2%	-2.5%	-9.1%

The deferred care impacts were then combined with the cost of COVID treatment to estimate a combined cost and impact on the total cost of care, shown previously in Table 1C.

## Appendix A: Reliances and Limitations

Wakely relied significantly on the survey data for unit cost assumptions. AHIP surveyed their members and received 21 responses, representing 16% of Medicare Advantage enrollment, 42% of Commercial enrollment, and 34% of Medicaid MCO enrollment. Each respondent answered questions on the average cost of inpatient non-ICU, inpatient ICU, outpatient, and additional other costs for COVID treatment for each line of business. Despite a fairly even representation of respondents in various geographic regions, the estimated costs were relatively clustered. However, credible COVID data is still emerging. To the extent that actual costs are ultimately significantly different from what was provided in the survey and used in the analyses, the results of this analysis on COVID treatment will also vary.

Wakely also relied on the following public data sources to inform the assumptions used in the analyses:

- KFF (enrollment figures by line of business)
- CDC (rates of hospitalization and deaths)
- CMS Medicare Advantage enrollment reports
- Rate of Infection (as noted in references)
- Rate of hospitalizations (as noted in references)
- Morbidity Adjustment for Lines of Business<sup>22</sup>
- Managed Medicaid enrollment data (<https://data.medicaid.gov/>)
- U.S. Census Bureau, Current Population Survey Table Creator (2018)
- National Health Expenditures 2011-2027, by source of coverage for hospital, physician and clinical services, and prescription drugs. Centers for Medicare & Medicaid Services, Office of the Actuary.
- Urban Institute “How the COVID-19 Recession Could Affect Health Insurance Coverage”

Wakely further referred to internal databases to develop assumptions on cost sharing and as reasonability checks for other data points.

- Wakely’s Affordable Care Act (WACA) national database, comprised of individual and small group data
- IBM® MarketScan® data, comprised of national commercial data (2017)
- Medicare’s Limited Data Set (2018)

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<sup>22</sup> <https://www.brookings.edu/research/estimating-potential-spending-on-covid-19-care/>

## Limitations

- **High-Risk Conditions.** While Wakely did make a high-level adjustment for lines of business with a higher proportion of high-risk conditions, it did not make a granular adjustment for particular conditions. The CDC acknowledges that individuals with high-risk conditions (such as obesity, heart disease, or severe asthma) are more at risk for severe complications from COVID.<sup>23</sup> Differences in health status, holding constant age, and gender, between lines of business, could result in differences from what is included in our estimates.
- **Forgoing of Care.** While Wakely did rely on issuer survey results on the expectations around deferred/foregone care, there remains extensive uncertainty. Changes in enrollee behavior, because of formal rules, hospital capacity, and individual perceptions may all result in changes in care pattern beyond what is currently expected.
- **Out of Network Costs and Cost-Sharing.** Wakely also did not adjust for potential out of network costs. If individuals receive treatment in out of network settings costs for Commercial carriers could be significantly higher. Our analysis did not take into account announcements made by health insurers that they are waiving out-of-pocket costs for COVID-19 testing and treatment, which shifts the responsibility for those costs from the patient to the insurer.
- **Price Changes.** The cost data used was from insurer's recent and emerging experience. If prices increase due to shortages or price gauging, the figures presented may underestimate the true cost.
- **CARES Act.** The CARES Act included an increase of 20% to the inpatient prospective payment system DRG rate for Medicare beneficiaries who have COVID during the public health emergency. Since Wakely assumed the COVID pandemic would continue into 2021, Wakely maintained the 20% increase in Medicare costs. If there was an early end to the public health emergency, Medicare costs could be lower than estimated.
- **Coverage Status.** Wakely assumed that coverage status would stay relatively constant for its primary analyses. While Wakely did provide preliminary sensitivity analyses on this topic changes in insurance coverage status (e.g., shift in number of insured, shift of coverage of status from Commercial to Medicaid, etc.) potentially could have material impact.
- **Timing of Infections.** While Wakely included sensitivity analyses on the timing that infections can occur, there remains extensive uncertainty as to exactly if there are infection spikes and if so when. These timing issues could impact in which year effects are felt.
- **Regional Variation.** Wakely relied on national assumptions for the cost estimates. Individual states or insurers could have impacts that deviate materially from the estimates. Furthermore, the estimates were derived with an underlying assumption that the impact

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<sup>23</sup> <https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/people-at-higher-risk.html>

of the pandemic would be relatively distributed nationwide. The extent to which COVID infection rates, or the government's and citizen's response to it, are materially different in different parts of the country, where prices and utilization may differ, the results could differ from those estimated above.

- **Economic Impacts.** There is the potential for severe economic effects of the pandemic and related policies to materially increase or decrease the impact on health insurers. Given the uncertainty, Wakely did not adjust coverage utilization patterns as a result of potential job loss or income loss that may occur.
- **Changes in Disease Costs.** Wakely did not model any changes in the long term costs for infected individuals. Individuals that have severe symptoms from the virus may require additional medical services. Wakely also assumed that individuals infected would not be re-infected by the disease. The costs do not include costs for vaccines and testing which could significantly impact total costs. Finally, Wakely did not account for any potential savings due to increased mortality among high-risk individuals with co-morbidities.

The estimates contained in this report are not intended and should not be used to develop pricing estimates for any line of business.

## Appendix B: Disclosures and Limitations

**Responsible Actuary.** Julie Peper is the actuary responsible for this communication. She is a Member of the American Academy of Actuaries and a Fellow of the Society of Actuaries. She meets the Qualification Standards of the American Academy of Actuaries to issue this report. Michael Cohen, PhD, also contributed to this report.

**Intended Users.** This information has been prepared for the sole use of the America's Health Insurance Plans (AHIP) and cannot be distributed to or relied on by any third party without the prior written permission of Wakely. Wakely understands that the report may be made public. Distribution to such parties should be made in its entirety and should be evaluated only by qualified users. The parties receiving this report should retain their actuarial experts in interpreting results.

**Risks and Uncertainties.** The assumptions and resulting estimates included in this analysis are inherently uncertain. Users of the results should be qualified to use it and understand the results and the inherent uncertainty. **Actual results may vary, potentially materially, from our estimates.** Wakely does not warrant or guarantee the projected values included in the analysis. It is the responsibility of the organization receiving this output to review the assumptions carefully and notify Wakely of any potential concerns.

**Conflict of Interest.** We are financially independent and free from conflict concerning all matters related to performing the actuarial services underlying these analyses. In addition, Wakely is organizationally and financially independent to AHIP.

**Data and Reliance.** We have relied on others for data and assumptions used in the assignment. We have reviewed the data for reasonableness, but have not performed any independent audit or otherwise verified the accuracy of the data/information. If the underlying information is incomplete or inaccurate, our estimates may be impacted, potentially significantly.

**Subsequent Events.** Subsequent events may impact the findings in this report. Changes in state policy, economic conditions, federal legislation, rate of COVID-19 infection and treatment patterns, and other factors and emerging data could result in material changes to this analysis.

**Contents of Actuarial Report.** This document and the supporting exhibits/files constitute the entirety of actuarial report and supersede any previous communications on the project.

**Deviations from ASOPs.** Wakely completed the analyses using sound actuarial practice. To the best of our knowledge, the report and methods used in the analyses are in compliance with the appropriate ASOPs with no known deviations. A summary of ASOP compliance is listed below:

ASOP No. 23, Data Quality

ASOP No. 41, Actuarial Communication

ASOP No. 56, Modeling (not yet effective but considered)