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RESEARCH BRIEF
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Analysis of the COVID-19 Pandemic's Impact on the New York State Workers' Compensation System

Introduction

The COVID-19 pandemic has devastated our communities, brought personal tragedy to many, and wreaked havoc on our economy. New York State's unique experience has been driven by the breadth of virus transmission throughout its downstate metropolitan region, New York City, which is the most densely populated American city with approximately 27,000 people per square mile. While managing a pandemic in a dense urban area presents a myriad of complexities, the New York State workers' compensation system will undoubtedly be called upon to compensate workers infected with the COVID-19 disease in the course of employment.

The purpose of this study is to provide a framework for understanding and estimating the direct impact of COVID-19 claims on medical and indemnity costs in the State's workers' compensation system.[1] While we also briefly discuss the pandemic's indirect impact, a detailed analysis is beyond the scope of this research brief. We hope that the information provided in this study will facilitate meaningful and informed discussion, policymaking, and decisions, and we also recognize that while the pandemic continues, its ultimate impact will remain largely unknown. This is so because the number of people infected and the number of COVID-19 claims filed are a function of public orders that have not yet been issued, choices that have not yet been made, behaviors that have yet to manifest, and the timing of scientific discovery that will bring this tragic period to conclusion.

Nevertheless, serious and thoughtful study on the impact of the COVID-19 pandemic cannot wait until the pandemic concludes and all claims and data have been submitted. Accordingly, this research brief relies upon Rating Board data as well as external information, data, and estimates from the New York State Workers' Compensation Board, the New York State Department of Labor, the Bureau of Labor Statistics, the Centers for Disease Control and Prevention, and published studies on medical treatment patterns and costs. In some instances, this research brief incorporates assumptions based upon conversations with workers' compensation experts and anecdotal evidence collected by the Rating Board. As more information becomes known and additional data emerges, these assumptions will be refined for use in future research briefs and analyses.

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[1] The Rating Board acknowledges that the underlying figures and estimates contained in this research brief depart from those contained in its March 27, 2020 Legislative Analysis. The March 27, 2020 Legislative Analysis was released at the request of public officials during New York State's 2020 budget negotiations and was based upon infection rate modeling prior to community mitigation activities and the April 2020 apex of hospitalizations and fatalities in New York State. This research brief utilizes recent information and data that was not available in March of 2020 and discusses additional variables.

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I. Compensability and Workforce Segmentation

A. Compensability

An analysis of the COVID-19 pandemic's impact on the workers' compensation system begins with estimating the scope of the worker population to whom benefits may apply. Absent legislation, regulations, or executive orders relating to compensability or burdens of proof for COVID-19 claims, the manner that current law is interpreted and applied will determine which classes of workers are able to successfully file claims. While judicial decisions related to COVID-19 claims' compensability have yet to be issued, in June of 2020, the New York State Workers' Compensation Board ("WCB") set forth the broad contours of its interpretation of current law.

In short, while compensability is a case specific determination, the WCB has acknowledged that workers who have contact with the public in certain industries where COVID-19 exposure is well known, such as healthcare workers, first responders, transportation workers, corrections officers, and food service workers, will be more likely to satisfy compensability requirements.[2] In addition, the WCB noted that workers who directly interact with the public while working, such as retail workers, are also more likely to be successful in making work-related claims.[3]

B. Workforce Segmentation

According to the New York State Department of Labor, as of May of 2020, there were approximately 8.05 million workers in the New York State – 6.65 million workers in the private sector and 1.40 million workers in the public sector.[4] However, as we have seen in the spring of 2020, stay-at-home orders impact employment significantly as they are relaxed and re-imposed as needed to control virus transmission. Accordingly, the total number of workers employed in the workforce may be somewhat unpredictable for the duration of the pandemic.

In all events, the segments of the workforce identified by the WCB in its June 2020 Q&A – healthcare workers, first responders, transportation workers, corrections officers, and food service workers – are of special interest in examining the COVID-19 pandemic's impact on the workers' compensation system due to their increased risk of exposure and higher likelihood of

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[2] *See* the New York State Workers' Compensation Board's COVID-19 & Workers' Compensation Q&A, June 2020; www.wcb.ny.gov/content/main/TheBoard/covid-19-workers-compensation-q-a-june-2020.pdf.

[3] *Id.*

[4] *See* the New York State Department of Labor's latest employment statistics by selecting New York State under Current Month Data, located at https://www.labor.ny.gov/stats/cesemp.asp. The number of workers in the State has decreased by approximately 1.5 million since March of 2020 due to the economic impact of the COVID-19 pandemic. *See id.*

compensability. However, it is important to recognize that some of these workers are either employed by self-insured entities or excluded from the workers' compensation system entirely.

There are approximately 1.47 million workers in the New York healthcare industry, which includes ambulatory healthcare services, hospitals, nursing and residential care facilities, and social assistance.[5] The WCB estimates that 15% of these workers are employed by either the State or local governments, which are self-insured entities.

In addition, out of approximately 300,000 first responders in New York State (*e.g.*, police officers, firefighters, and corrections officers), over 92% are employed by the State or local governments and many do not participate in the workers' compensation system.[6] For example, the approximately 36,000 uniformed officers of the New York City Police Department,[7] as well as New York City Firefighters, receive "line of duty" benefits in lieu of workers' compensation benefits, and therefore, must be excluded from this analysis.[8] Similarly, police officers and firefighters in other counties of the State also receive line of duty benefits in lieu of workers' compensation and must be excluded from this analysis.

Special attention must also be paid to another cohort of workers that have been interacting with the public throughout the stay-at-home order – workers in food and beverage stores, gasoline stations, transport and warehousing, transit and ground passenger transportation, telecommunications, utilities, and commercial banking and credit ("Other Essential Workers"). Unlike first responders, many of these Other Essential Workers are employed by the private sector and their employers are typically either self-insured or obtain insurance in the workers' compensation insurance marketplace. The following table contains the counts of Other Essential Workers in New York State as of May of 2020.[9]

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5 *See id.*

6 The first responder population data was obtained from the WCB.

7 *See* the New York Police Department Fiscal 2020 Preliminary Plan at p. 5; https://council.nyc.gov/budget/wp-content/uploads/sites/54/2019/03/056-NYPD-2020.pdf.

8 *See* a description of who is not covered by the New York State Workers' Compensation law at http://www.wcb.ny.gov/content/main/Workers/Coverage_wc/workerWhoNotCovered.jsp.

9 *See* the New York State Department of Labor's latest employment statistics by selecting New York State under Current Month Data, located at https://www.labor.ny.gov/stats/cesemp.asp.

Other Essential Workers by Industry	
Industry	**Number of Workers**
Food and Beverage Stores	200,300
Gasoline Stations	26,400
General Merchandise Stores, including Warehouse Clubs and Supercenters	60,900
Transportation and Warehousing	200,600
Telecommunications	40,500
Utilities	35,900
Credit Intermediation and Related Activities	170,600

Source: New York State Department of Labor, May 2020

The vast majority of the New York State workforce not discussed above are covered by the workers' compensation system ("Other Workers") through self-insurance, private insurance, or the New York State Insurance Fund.[10]

In addition, it is also important to note that many workplaces have changed significantly during the pandemic. Research suggests that 37% of jobs in the United States can be performed at home,[11] and in light of the restrictions imposed by the March of 2020 stay-at-home order, it is very likely that workers performing these jobs are doing so from home for at least the duration of the order. Anecdotal evidence collected by the Rating Board suggests that many will continue to work from home even once they are permitted to return to the workplace. Since working from home without contact with customers, the public, co-workers, clients, and others virtually eliminates the possibility of work-related virus transmission, this shift in the workplace will almost certainly reduce the number of COVID-19 claims. Further, when workers do return to the workplace, it is reasonable to expect that adherence to guidance from the New York State Department of Health will reduce the probability of virus transmission in the workplace.[12]

II. External Factors to be Considered in Determining the COVID-19 Impact

At least two factors will play a large role in determining the workers' compensation system costs associated with the COVID-19 pandemic: (a) the infection rate; and (b) the claim filing rate of workers who are infected in the course of employment.

[10] A notable exception are New York City school teachers, who are covered by other systems in lieu of workers' compensation.

[11] *See* Dingel, Jonathan I., and Brent Neiman, "How Many Jobs Can be Done at Home?" *Booth School of Business, University of Chicago*, May 12, 2020; https://brentneiman.com/research/DN.pdf.

[12] *See* New York State Department of Health, "Interim Guidance for Office-Based Work During the COVID-19 Public Health Emergency" May 28, 2020; https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/offices-interim-guidance.pdf.

A. Infection Rate

While the lack of sufficient testing has made identifying the infection rate in New York State a difficult exercise, examining at least two measures is instructive. First, COVID-19 infection testing reveals, at minimum, the lower bound of the true infection rate. As of June 22, 2020, the number of infected people in New York exceeded 388,000,[13] yielding a 2% infection rate for the State's 19.5 million residents.[14]

Second, New York State's antibody testing survey is arguably more reflective of the true infection rate because it represents a random sampling that includes asymptomatic individuals and symptomatic individuals who were not tested for the virus. As of June 16, 2020, the antibody testing survey indicates that the statewide infection rate is approximately 13.4% or 2.6 million infections.[15] The infection rate of New York City is 21.6%, while the rate of most upstate regions is between 2% and 4%.[16] While these estimates are considerably lower than those predicted by modeling in March of 2020[17] prior to community mitigation activities and the apex of hospitalizations and fatalities, the pandemic is not yet resolved, and the infection rate will likely continue to increase at a rate that reflects mitigation efforts.

B. Claim Filing Rate of Workers Infected in the Course of Employment

The total system cost of COVID-19 claims will be driven by workers infected in the course of employment who file claims, not by those who do not. It is reasonable to assume that some workers who contract the virus in the course of employment and experience mild symptoms will choose to take advantage of paid leave programs offered pursuant to Federal law, State law, local ordinance or company policy instead of applying for workers' compensation benefits. Initial anecdotal experience from insured and self-insured essential businesses supports this

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[13] New York State Department of Health, "Test Results Table," June 22, 2020, https://covid19tracker.health.ny.gov/views/NYS-COVID19-Tracker/NYSDOHCOVID-19Tracker-TableView?%3Aembed=yes&%3Atoolbar=no&%3Atabs=n.

[14] *See* New York State population data at https://www.census.gov/quickfacts/fact/table/NY/PST045219.

[15] *See* https://www.governor.ny.gov/news/governor-cuomo-announces-us-open-be-held-without-fans-august-31st-september-13th; *see also* https://dailyvoice.com/new-york/whiteplains/news/covid-19-new-antibody-test-results-released-for-hudson-valley-for-first-time-in-six-weeks/789445/.

[16] *See id.*

[17] On March 21, 2020, Governor Cuomo estimated that between 40% and 80% of New York State residents could be infected with the coronavirus over the course of the pandemic. *See* a transcript of Governor Cuomo's statement at https://www.c-span.org/video/?c4862678/governor-cuomo-10000-coronavirus-cases-york-state.

assumption. Data samples obtained by the Rating Board from stakeholders containing COVID-19 claim activity from March of 2020 through May of 2020 suggests that the number of COVID-19 claims filed has been low relative to the estimated infection rate in New York State. This anecdotal data may be explained by a variety of factors, including (a) a significant time lag between the date of injury and the filing of the claim; and (b) not all workers infected in the course of employment filed workers' compensation claims.

In all events, it stands to reason that workers who suffer severely from the COVID-19 disease (*e.g.*, lengthy hospitalization, significant medical interventions, permanent injuries) will be less likely to forgo workers' compensation benefits than those with mild symptoms who may only be eligible for minimal temporary benefits. This may result in a filing rate that differs based upon severity of symptoms. As more information becomes available, clarity on these issues will emerge.

III. Medical Cost Analysis

For the purpose of this analysis, medical costs for COVID-19 claims are segregated into three groups: (a) medical costs associated with inpatient hospitalization, including those that require intensive care treatment; (b) short-term medical costs associated with treatment provided to workers who experience symptoms but do not require hospitalization; and (c) long-term medical costs associated with significant impairment caused by the COVID-19 disease.

Before discussing medical costs for COVID-19 treatment, it is important to examine the current estimated medical care utilization rates published by the Centers for Disease Control and Prevention ("CDC"). These estimates, which are published to support public health preparedness and planning, are updated periodically and include utilization of hospitals, Intensive Care Unit ("ICU") beds, ventilators, as well as other related estimates.[18]

A. Medical Care Utilization Rate

i. *Rate of Hospitalization*

The CDC estimates that 65% of COVID-19 cases are symptomatic, and that 3.4% of symptomatic cases require hospitalization.[19] Pursuant to these estimates, approximately 2.2% of infected individuals require hospitalization (65% x 3.4%). Accordingly, to compute the number of workers that would require hospitalization, the number of infected workers (*see* Section II) is multiplied by 2.2%.

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[18] *See* the CDC's published Pandemic Planning Scenarios for healthcare utilization estimates at https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html.

[19] *See id.*

ii. *Rate of Intensive Care Unit Admissions*

The CDC estimates that approximately 25% of cases requiring hospital admission will also require ICU care.[20] Older workers are more likely to require ICU care than younger workers.[21] Approximately 75% of COVID-19 patients in the ICU receive mechanical ventilation.[22]

B. Hospitalization Costs

Hospitalization costs will likely represent a significant portion of the COVID-19 impact on the workers' compensation system. Since the Rating Board has yet to receive medical billing data on COVID-19 claims, it has utilized the New York State Workers' Compensation Medical Fee Schedule, which incorporates the New York State Department of Health Inpatient Hospital Fee Schedule and Tables, and Rating Board Medical Data to better understand potential hospitalization costs.[23]

Hospital costs vary by both region of New York State and hospital, because they are subject to regional medical pricing differences in the New York State Department of Health Hospital Inpatient Fee Schedule. For example, the base discharge case payment rate for inpatient hospital services varies significantly from just over $5,000 for hospitals in upstate New York, to over $11,000 for several hospitals in the New York City area.[24] These base rates are multiplied by a factor associated with the specific diagnosis-related group ("DRG") to determine the appropriate cost for each medical condition.[25] Additional adjustments may apply for individual hospitals and result in the final "inlier" fee schedule reimbursement amount. Outlier charges are

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[20] *See id.*

[21] *See id.*

[22] *See id.*

[23] The Rating Board has consulted with workers' compensation medical billing experts to confirm its understanding and validate its application of the medical fee schedule discussed herein.

[24] *See* the New York State Department of Health's Schedule of Workers' Compensation / No Fault Inpatient Case Payment Rates, Effective January 1, 2019 through December 31, 2019 at http://www.wcb.ny.gov/content/main/hcpp/MedFeeSchedules/2019JanDecWCNFRates.pdf.

[25] *See* the New York State Department of Health's Final APR-DRG Weights at https://www.health.ny.gov/facilities/hospital/reimbursement/apr-drg/weights/2018-07-01_final_weights.htm.

applied when the gross charges exceed a DRG-specific dollar threshold for the servicing hospital, and additional cost may result.[26]

Estimating the total COVID-19 related hospital costs for the workers' compensation system requires assumptions on the number of workers receiving non-ICU and ICU treatments and the following calculations: (a) multiply the number of workers receiving non-ICU hospitalization treatment by the average non-ICU cost; (b) multiply the number of workers receiving ICU hospitalization treatment by the average ICU cost; and (c) sum the total non-ICU cost together with the ICU cost. As time passes, more information will become available to support assumptions on the number of workers receiving inpatient hospitalization treatment.

i. *Cost of Non-ICU Hospitalization*

As noted above, approximately 75% of COVID-19 patients admitted to the hospital will be treated in a non-ICU setting.[27] The fees charged for these inpatient services are driven by the services performed and the servicing hospital's rates.

The APR-DRG diagnostic code most closely associated with COVID-19 related non-ICU hospitalizations is Code 137 or "Major Respiratory Infections and Inflammations." The severity of illness impacts the rates and is determined by the number, nature, and interaction of complications and comorbidities as well as certain procedures. At severities 3 and 4, Code 137 has service intensity weights of 1.6768 and 2.6121, respectively.[28] Service intensity weights are multiplied by the discharge case payment rate to generate a case mix adjusted discharge payment, which is then added together with the Direct Medical Education ("DME") Rate, a Capital Rate, and a Public Goods Surcharge.

As of June 15, 2020, roughly 90% of New York State residents with positive test results live in the New York City, Long Island, and Mid-Hudson regions, which are home to hospitals with higher billing rates than hospitals located elsewhere in New York State.[29] Mapping individual

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[26] *See* the New York State Department of Health's Workers' Compensation / No Fault Payment Calculation Worksheet at http://www.wcb.ny.gov/content/main/hcpp/MedFeeSchedules/2019JanDecSamplePaymentCalculations.pdf.

[27] *See* the CDC's published Pandemic Planning Scenarios for healthcare utilization estimates, which provides estimates of ICU and non-ICU hospitalizations at https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html.

[28] *See* the New York State Department of Health's Final APR-DRG Weights at https://www.health.ny.gov/facilities/hospital/reimbursement/apr-drg/weights/2018-07-01_final_weights.htm.

[29] *See* New York State's Statewide COVID-19 Testing Data at

hospitals to New York State regions and then weighting the regions by the number of positive tests as of June 15, 2020, yields an average discharge case payment rate of $9,576, an average DME Rate of $1,124, and an average Capital Rate of $1,180.[30] Applying these three average weighted hospital rates to the applicable Service Intensity Weights for APR-DRG Code 137 in the Inlier Payment Calculation Worksheet,[31] after inclusion of the 9.63% Public Goods Surcharge, generates an estimated non-ICU hospitalization cost range of $20,129 to $29,948.[32]

An examination of the Rating Board's medical data for payments made for inpatient hospital services based on the number of hospitalization days corroborates the above-described $20,000 to $30,000 cost range for non-ICU hospitalizations. Specifically, the CDC estimates that COVID-19 non-ICU hospitalizations stays are approximately 4 days in length.[33] The Rating Board's medical data suggests that the total average cost for a 4 day inpatient hospitalization is approximately $28,000, with longer stays ranging from 6 to 28 days averaging $44,000. Further, consistent with the APR-DRG pricing model, the Rating Board's data indicates that the majority of the non-ICU inpatient hospitalization cost is generated in the first few days of care with additional days adding only marginal cost. A summary of this data is displayed in the table below.

Inpatient Hospitalization Costs per Day		
Inpatient Hospitalization Days	**Inpatient Cost Per Additional Day**	**Total Inpatient Cost**
2	$7,404	$20,461
3	$4,025	$24,486
4	$3,610	$28,096
5	$2,861	$30,957
6+	$1,259	$43,813

Source: Rating Board Medical Data

https://health.data.ny.gov/Health/New-York-State-Statewide-COVID-19-Testing/xdss-u53e/data.

30 *See* the New York State Department of Health's Schedule of Workers' Compensation / No Fault Inpatient Case Payment Rates at http://www.wcb.ny.gov/content/main/hcpp/MedFeeSchedules/2019JanDecWCNFRates.pdf.

31 *See* the New York State Department of Health's Sample Payment Calculation Worksheet at http://www.wcb.ny.gov/content/main/hcpp/MedFeeSchedules/2019JanDecSamplePaymentCalculations.pdf.

32 Since the relevant fee schedules are not based on a "fee for service" model, there is not a linear relationship between the number of days spent in the hospital and the ultimate hospitalization cost.

33 *See* utilization estimates published by the CDC at https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html.

ii. *Cost of ICU Hospitalization*

The CDC estimates that approximately 25% of COVID-19 patients admitted to the hospital will require treatment in an ICU.[34] There are at least three APR-DRG diagnostic codes that are closely associated with COVID-19 ICU hospitalizations and could apply to those visits depending on the level of healthcare service provided. Regardless of which APR-DRG diagnostic code is used, the billing procedure for non-ICU hospitalizations described above will apply.

APR-DRG Code 130, "Respiratory System Diagnosis with Ventilator Support 96+ hours," is closely associated with COVID-19 ICU hospitalizations and yields an average hospital cost range of $47,458 to $66,279.

If additional services and procedures beyond a ventilator are provided to COVID-19 patients, APR-DRG Codes representing additional healthcare services may be utilized. For example, APR-DRG Code 005, "Tracheostomy with Mechanical Ventilation 96+ hours without Extensive Procedure," may be applied and will yield a cost range of $99,452 to $147,290.

It is also possible that significant medical intervention associated with the treatment of COVID-19 patients will be assigned APR-DRG Code 004, "Tracheostomy with Mechanical Ventilation 96+ hours and Extensive Procedure or ECMO." While this code will likely be used less frequently than others, it will result in higher costs in the range of $108,248 to $192,250.[35]

C. Additional Medical Costs

While the healthcare services provided in hospitals undoubtedly comprise a significant portion of COVID-19 related treatments and costs, they are not the whole story. Many healthcare professionals believe that the COVID-19 disease will result in long-term health impairment for some patients, and if that proves true, additional medical costs are certain to follow.

> COVID-19's immediate assault on the body is extensive. It targets the lungs, but a lack of oxygen and widespread inflammation can also damage the kidneys, liver, heart, brain, and other organs.[36]

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[34] *See* the CDC's published Pandemic Planning Scenarios for healthcare utilization estimates, which provides estimates of ICU and non-ICU hospitalizations at https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html.

[35] Ranges shown are based on "inlier" hospital payments at APR-DRG severities of 3 and 4. However, in limited instances, "outlier" payments may also be associated with COVID-19 healthcare services and will increase the final hospital costs associated with these APR-DRG diagnostic codes.

[36] Servick, Kelly, "For Survivors of Severe COVID-19, Beating the Virus is Just the Beginning" *Science Magazine*, April 8, 2020; https://www.sciencemag.org/news/2020/04/survivors-severe-covid-19-beating-virus-just-beginning.

> Many patients hospitalized for COVID-19 are experiencing unexpectedly high rates of blood clots, likely due to inflammatory responses to the infection. These can cause lung blockages, strokes, heart attacks, and other complications with serious, lasting effects.[37]

An examination of the Rating Board's Unit Statistical data related to lung injuries[38] provides an understanding of potential non-hospitalization COVID-19 healthcare costs.

i. *Medical Only COVID-19 Claims*

The cost of medical only lung claims are likely to be similar to the medical costs incurred by workers who experience COVID-19 symptoms but do not require hospitalization. The average incurred medical cost for medical only lung claims is approximately $2,200,[39] and typically includes evaluation and management, diagnostic testing, and drugs.

ii. *Long-Term Medical Costs for COVID-19 Claims*

The medical costs associated with lost-time lung claims may provide insight into long-term medical costs resulting from the COVID-19 disease. Most lost-time lung claims have total incurred medical costs between $65,000 and $85,000, although there is substantial variability beyond this range with some claims having a significantly higher reported amount.[40] Since these incurred medical costs include claims that did not involve hospitalizations, it is reasonable to assume that at least some COVID-19 lost-time claims that involve hospitalizations will exceed $85,000.

To better understand the long-term medical costs for the most severe COVID-19 claims, the Rating Board examined claims that involved ICU treatment, respiratory services, or

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[37] Parshley, Lois, "The Emerging Long-Term Complications of COVID-19 Explained" *Vox*, June 12, 2020; https://www.vox.com/2020/5/8/21251899/coronavirus-long-term-effects-symptoms.

[38] The total universe of workers' compensation claims involving lung injuries is limited because most workers' compensation claims are musculoskeletal in nature.

[39] Rating Board Unit Statistical Data, Medical Only Lung Claims, Accident Years 2012-2019. Reported losses developed to ultimate, on-leveled, and trended to 2020.

[40] Rating Board Unit Statistical Data, Lost-Time Lung Claims, Accident Years 2012-2019. Reported losses developed to ultimate, on-leveled, and trended to 2020.

mechanical ventilation.[41] The average incurred medical cost for these claims is approximately $200,000.[42] Further, these claims have a wide range of outcomes with several claims reporting incurred medical amounts in excess of $1 million.

D. Medical Cost Model

While the information and variables discussed in Sections I, II, and III above provide a meaningful framework for further discussion and analysis, there remains considerable uncertainty over the ultimate medical costs that will result from the COVID-19 pandemic. This is so because the pandemic continues as of the date of publication and data and claims have yet to be submitted to the Rating Board. Nevertheless, the following Medical Cost Model provides guidance on how medical costs can be computed once additional data and experience is known.

COVID-19 Medical Cost Model

Number of Workers	W
Infection Rate	IR
Total Workers Infected	T = W x IR

Medical Treatment Provided	Distribution of Infected Workers*	Percentage of Infected Workers who File Claims	Percentage of Claims that are Compensable	Number of Compensable Claims	Short-Term Medical Cost per Claim	Long-Term Medical Cost per Claim	Total Medical Cost per Treatment Group
	1	2	3	4 = T x 1 x 2 x 3	5	6	7 = 4 x (5 + 6)
Asymptomatic Cases	35.0%						
Minor Medical, No Hospitalization	62.8%						
Hospitalization, No ICU, No Ventilation	1.8%						
Hospitalization, ICU, No Ventilation	0.1%						
Hospitalization, ICU, Ventilation	0.3%						
All Medical Cases	100%						

* Estimates published by the CDC

[41] Rating Board Unit Statistical Data and Medical Data, Claims reported with ICU (0200, 0202, 0206, 0209) or Respiratory Revenue Code (0410-0419) or CPT Codes identifying mechanical ventilation, Accident Years 2012-2019. Reported losses were developed to ultimate, on-leveled, and trended to 2020.

[42] *See id.*

IV. Indemnity Cost Analysis

For the purpose of this analysis, indemnity benefits are grouped into three categories: (i) temporary total benefits representing payments made in the short-term to injured workers whose medical condition prevents them from working; (ii) permanent benefits for workers who have sustained injuries reducing their ability to return to work in the future; and (iii) fatalities.

A. Temporary Total Benefits

Temporary total benefits represent one of several indemnity related COVID-19 costs for the workers' compensation system.[43] As the Rating Board has yet to receive Unit Statistical data for COVID-19 claims, employment data and wage distributions by occupational classification from the New York State Department of Labor and the Bureau of Labor Statistics were utilized to examine the two primary drivers of temporary total benefits costs – the average weekly benefit and the duration of the benefit.

i. *Average Weekly Benefit*

The average weekly benefit for workers who contract the virus and file for workers' compensation benefits is a function of claimants' wages, which vary significantly by occupation. Specifically, pursuant to the New York State Workers' Compensation law, a worker's temporary total disability benefit is two-thirds of their average weekly wage for the previous year, subject to a maximum which is updated annually.[44] For injuries occurring between July 1, 2019 and June 30, 2020, a $934.11 maximum weekly benefit applies to workers with an average weekly wage of $1,401.17 ($72,860.84 annually) or higher.[45] Workers with injury dates on or after July 1, 2020, are subject to a maximum weekly benefit of $966.78, which applies to those with an average weekly wage of $1,450.17 ($75,408.84 annually) or higher.[46]

It is widely recognized that essential workers, such as healthcare workers and first responders, may be exposed to the virus in the course of employment and are more likely to qualify for benefits. Accordingly, a close examination of wages in these industries is warranted. First, according to the Bureau of Labor Statistics, approximately half of the individuals employed

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[43] As discussed in Section II(B), it is reasonable to assume that a portion of workers infected with the virus in the course of employment will pursue alternative paid leave programs instead of filing workers' compensation claims.

[44] *See* a full description of workers' compensation benefits on the New York State Workers' Compensation Board's website at http://www.wcb.ny.gov/content/main/onthejob/wcBenefits.jsp.

[45] *See id.*

[46] *See id.*

within the healthcare industry in New York State are in the "Healthcare Practitioners and Technical Occupations" category, such as doctors and nurses, and have an average annual wage in excess of $93,000.[47] Accordingly, it is reasonable to assume that the majority of these healthcare and frontline workers in New York State will receive the maximum weekly benefit.

Second, the "Healthcare Support Occupations" category is also largely comprised of essential frontline workers who may be exposed to the virus, such as home health and personal care aides, nursing assistants, and orderlies.[48] The average annual wage for this group is approximately $33,000, yielding an average weekly benefit of roughly $425.

Assuming that essential healthcare workers in each occupational category – "Healthcare Practitioners and Technical Occupations" and "Healthcare Support Occupations" – file claims at the same rate, the average weekly temporary total disability benefit paid will be approximately $680. To the extent that one group files more claims than the other, the average weekly benefit paid will change accordingly.

Third, public safety frontline workers, such as police officers, firefighters, and corrections officers, can be divided into two groups – those who participate in the workers' compensation system and those who do not. As discussed above in Section I(B), the vast majority of frontline police officers and firefighters receive "line of duty" benefits in lieu of workers' compensation benefits. However, corrections officers do generally participate in the workers' compensation system. As a group, "Corrections Officers and Jailers" earn on average $66,000 per year, "Probation Officers and Correctional Treatment Specialists" earn on average $71,280 per year, and "First-Line Supervisors of Corrections Officers" earn on average $93,430 per year.[49] The weighted average of these three occupational groups is about $70,000, yielding an average weekly benefit in excess of $800 for frontline corrections staff and the maximum weekly benefit (either $934.11 or $966.78 depending on the date of injury as described above) for corrections supervisors, putting upward pressure on the average weekly benefit for essential frontline workers.

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47 *See* the Bureau of Labor Statistics May 2019 New York State Occupational Employment and Wage Estimates at https://www.bls.gov/oes/current/oes_ny.htm#29-0000.

48 *See id.* at https://www.bls.gov/oes/current/oes_ny.htm#31-0000.

49 *See id.* at https://www.bls.gov/oes/current/oes_ny.htm#21-0000 (Occupation Code 21-1092) and https://www.bls.gov/oes/current/oes_ny.htm#33-0000 (Occupation Codes 33-1011 and 33-3012).

ii. *Duration of Temporary Benefits*

Generally, claimants receive temporary benefits until they reach maximum medical improvement, and temporary total disability ("TTD") will be awarded to claimants who are unable to return to work at all during this period due to their medical condition.

From our current understanding of the COVID-19 disease, it is reasonable to expect somewhat limited TTD durations for claimants who remain home while recovering from mild symptoms. Further, pursuant to New York State law, indemnity benefits for the first seven days of the disability are not paid unless the absence from work extends beyond 14 days, and accordingly, claimants with minor symptoms who return to work within that seven day period will not receive any TTD benefits.[50] On average, the duration for mild cases may be less than two weeks.

The TTD duration for claimants who are hospitalized will be longer than it will be for those who are not. Claimants who require non-ICU hospitalization have an average hospital stay of four to five days,[51] will likely continue to recuperate from home following discharge, and it is reasonable to expect that they may return to work after four to six weeks. Claimants requiring hospitalization and medical treatment in an ICU may be unable to work for several months following discharge.

Further, it bears mention that the WCB has suspended the requirement that claimants demonstrate labor market attachment during the emergency period.[52] Dispensing with this requirement for the duration of the pandemic may increase the ultimate TTD duration for both COVID-19 claims and claims not related to COVID-19.

B. Permanency Benefits

i. *Discussion of Potential Permanent Injuries*

As noted above, medical experts believe that while some patients may fully recover from the COVID-19 disease, others may suffer long-term injury including lung scarring, blood clots,

[50] *See* a description of the 14-day waiting period on the New York State Workers' Compensation Board's website at www.wcb.ny.gov/content/main/onthejob/wcBenefits.jsp.

[51] *See* utilization estimates published by the CDC at https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html.

[52] *See* the WCB Notice related to the suspension of the labor market attachment requirement at http://www.wcb.ny.gov/content/main/TheBoard/WCB_COVID19_LaborMarketAttachment.pdf.

heart damage, kidney damage, and neurological damage.[53] Further, and as detailed in Section V below, the pandemic has also resulted in mental health illness.

By way of example, severe pneumonia caused by other diseases demonstrates that lung scarring can cause long-term breathing problems. A study published in the New England Journal of Medicine in 2011 found that out of 109 survivors of Acute Respiratory Distress Syndrome ("ARDS") (a) 51% suffered physician-diagnosed depression, anxiety, or both; (b) just 77% of the 83% of patients who survived throughout the study period returned to work within five years after being treated; and (c) five years later, only 39% of patients were able to walk the distance expected for their age group in an allotted amount of time, suggesting a high degree of physical impairment.[54] A study of 138 patients hospitalized in Wuhan, China, due to pneumonia from COVID-19, indicated that 20% suffered from ARDS.[55]

Accordingly, it is reasonable to expect that some claimants, particularly those with severe COVID-19 disease requiring hospitalization, will not be able to return to work after a short healing period and may suffer permanent injuries.

ii. *Analysis of Analogous Illnesses by Benefit Type*

While the Rating Board has not yet received COVID-19 claims data, an analysis of claims with similar injuries, by benefit type, may foreshadow what is to come.[56] An examination of lung claims from 2012 to 2019 indicates that approximately 80% of the claims are medical only, and about 40% of lost-time claims received permanent partial or permanent total benefits. Detail on the incurred indemnity costs of these lung claims is contained in the table below.[57]

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[53] *See* Parshley, Lois, "The Emerging Long-Term Complications of COVID-19 Explained" *Vox*, June 12, 2020; https://www.vox.com/2020/5/8/21251899/coronavirus-long-term-effects-symptoms.

[54] *See* Herridge, Margaret, and Catherine Tansey, *et al.* "Functional Disability Five Years After Acute Respiratory Distress Syndrome" *The New England Journal of Medicine*, 364(14): 1293-304 (2011); https://www.nejm.org/doi/full/10.1056/NEJMoa1011802.

[55] *See* Wang, Dawei, and Bo Hu, *et al.* "Clinical Characteristics of 138 Hospitalized Patients with 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China" *JAMA Network,* February 7, 2020; https://jamanetwork.com/journals/jama/fullarticle/2761044.

[56] Claims containing a significant Employers' Liability component were removed from the analysis to avoid an unwarranted bias in the results.

[57] The indemnity costs contained in the tables in this section were generated from incurred values reported on Unit Statistical Data, and were trended and developed using the same actuarial techniques employed in the Rating Board's annual aggregate loss cost filing. Claim counts were obtained from Accident Years 2012 to 2017.

Distribution of Lung Claims by Benefit Type			
Benefit Type	Percentage of Claims	% of Lost-Time Claims	Average Indemnity Cost
Temporary Total	10.2%	48.5%	$43,990
Permanent Partial	7.9%	37.8%	$156,235
Permanent Total	0.7%	3.2%	$626,435
Fatal	2.2%	10.5%	$567,633[58]
Med Only	79.0%		

To obtain insight into the most serious COVID-19 claims, the Rating Board examined claims from 2012 to 2019 with ICU treatment or respiratory services.[59] The majority of these claims include a lost-time benefit component. About two-thirds of these lost-time claims were identified as permanent partial with an average incurred indemnity severity in excess of $200,000 while about 3% were identified as permanent total with an average incurred indemnity severity exceeding $670,000. The distribution of these claims, by type of injury, is displayed in the table below.

Distribution of ICU and Respiratory Service Claims by Benefit Type			
Benefit Type	Percentage of Claims	% of Lost-Time Claims	Average Indemnity Cost
Temporary Total	25.5%	28.8%	$80,241
Permanent Partial	58.9%	66.6%	$217,812
Permanent Total	2.6%	2.9%	$673,904
Fatal	1.5%	1.7%	$567,633[60]
Med Only	11.5%		

An examination of claims from 2012 to 2019 with mechanical ventilation services corroborates the experience shown in the ICU treatment and respiratory services data set forth

[58] The value of a fatality benefit is a function of the decedent's weekly wage and the number of years that beneficiaries live to collect the benefit; the calculation is not impacted by the cause of injury. The average fatality indemnity cost is derived from fatalities reported to the Rating Board for policy years 2012-2017.

[59] Rating Board Unit Statistical Data and Medical Data, Claims reported with ICU (0200, 0202, 0206, 0209) or Respiratory Revenue Code (0410-0419) or CPT Codes identifying mechanical ventilation, Accident Years 2012-2019. Reported losses were developed to ultimate and trended to 2020.

[60] *See* footnote 58.

in the preceding table.[61] Statistics for claims involving mechanical ventilation are summarized in the following table.

Distribution of Mechanical Ventilation Claims by Benefit Type			
Benefit Type	**Percentage of Claims**	**% of Lost-Time Claims**	**Average Indemnity Cost**
Temporary Total	26.7%	32.4%	$92,528
Permanent Partial	51.8%	62.8%	$174,516
Permanent Total	3.0%	3.6%	$613,391
Fatal	1.0%	1.2%	$567,633[62]
Med Only	17.5%		

Finally, an analysis of workers' compensation claims of workers injured during the September 11, 2001 World Trade Center clean-up effort[63] is also informative because 68% of those claims involved respiratory injuries.[64] Of those respiratory claims, 30% were either permanent total or permanent partial with an average incurred indemnity benefit amount of $227,148 in 2020 dollars.[65]

C. Fatalities

While we hope that safety protocols, including the use of personal protective equipment, will limit virus transmission in the course of employment and the fatalities that may result, the COVID-19 fatality claims filed and reported to the Rating Board will significantly contribute to overall indemnity costs. Fatality costs will be driven by the average fatality indemnity payment and the fatality rate.

[61] Although these claims received mechanical ventilation, that medical treatment may have occurred some time after the injury, and not necessarily within the first 30 days after the date of injury, as is the case with COVID-19 treatment.

[62] *See* footnote 58.

[63] These injuries occurred during the rescue, recovery, and clean-up operations at the World Trade Center that were undertaken between September 11, 2001 through September 12, 2002.

[64] *See* the Rating Board's 2019 Large Claim Study, September 2019, Exhibit 59 https://www.nycirb.org/officialdocs/NYCIRB-2019-Large-Claims-Study.pdf.

[65] The Rating Board used Catastrophe Code 87 to identify respiratory injuries in the September 11th clean up. The analysis started with claims at 10th report and were trended and on-leveled to 2020.

i. *Average Fatality Claim Indemnity Severity*

To gain a better understanding of the cost of COVID-19 fatality claims, the Rating Board analyzed fatality claim indemnity payments from policy years 2012 to 2017 – approximately 140 claims for each policy year.[66] The result of this analysis yields an average indemnity cost range of $500,000 to $675,000. That the fatality claims from policy years 2012 to 2017 may have different cause and nature of injuries has no import here because the indemnity benefit calculation for fatality claims is a function of the decedent's weekly wage and the number of years that beneficiaries live to collect the benefit, not the underlying injury.

However, it is important to note that (a) there is significant variability in fatality claim severity amounts; and (b) since indemnity severity for fatality claims is also impacted by settlement practices, it is possible that settlements for COVID-19 fatality claims may follow a different pattern and yield different indemnity costs. The results of the above-described fatality claim analysis are summarized in the table below.

Analysis of Fatality Claims		
Policy Year	**Number of Claims**	**Average Indemnity Severity**
2012	133	$497,394
2013	139	$605,446
2014	146	$686,944
2015	130	$559,931
2016	130	$538,791
2017	151	$517,292
Average	138	$567,633

ii. *Fatality Rate*

Medical professionals are slowly developing a better understanding of the impact COVID-19, including the fatality rate. The CDC has modified its estimate of the COVID-19 fatality rate several times to reflect new data. As of June 12, 2020, the CDC estimates that the fatality rate is 0.05% for the age group of 0-49, 0.2% for the age group 50-64, and 1.3% for those 65 years old and older.[67]

[66] The indemnity costs for these claims were obtained from Rating Board Unit Statistical Data, developed, trended, and on-leveled to 2020 levels.

[67] *See* the CDC's published Pandemic Planning Scenarios for healthcare utilization estimates at https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html.

D. Indemnity Cost Model

There remains considerable uncertainty over future COVID-19 indemnity costs for the reasons discussed throughout this research brief. However, based on previously cited statistics, it is reasonable to expect that some temporary total, permanent partial, permanent total, and fatality claims will be reported with significant associated indemnity costs. The following Indemnity Cost Model provides a framework for considering these costs.

COVID-19 Indemnity Cost Model

Number of Workers	W
Infection Rate	IR
Total Workers Infected	T = W x IR

Medical Condition	Distribution of Infected Workers	Percentage of Workers who Receive Benefit Type[68]	Number of Workers	Average Cost Per Claim	Total Indemnity Cost
	1	2	3 = T x 1 x 2	4	5 = 3 x 4
Temporary Total					
No Hospitalization					
Hospitalization; No ICU					
Hospitalization; with ICU					
Permanent Partial					
No Hospitalization					
Hospitalization; No ICU					
Hospitalization; with ICU					
Permanent Total					
No Hospitalization					
Hospitalization; No ICU					
Hospitalization; with ICU					
Fatal Claims					
No Hospitalization					
Hospitalization; No ICU					
Hospitalization; with ICU					
Total Indemnity Costs					
Sum of Column 5 for All Benefit Types					

[68] The sum of the column 2 values of each medical treatment category (*e.g.*, "No Hospitalizations") will equal the percentage of workers receiving indemnity benefits for that medical treatment category.

V. Indirect Impacts of the COVID-19 Pandemic

The impact of the COVID-19 pandemic on the workers' compensation system will extend beyond losses incurred for COVID-19 claims. A variety of indirect impacts are briefly discussed below. While it may be too early to analyze the nature and full extent of these impacts, they merit serious consideration and study as more information becomes known.

A. Mental Health Benefits

Healthcare workers have and are continuing to work through unprecedented circumstances and stress in the workplace. Those who are involved in the diagnosis, treatment, and care of patients with COVID-19 are at risk of developing psychological distress and other mental health symptoms.

It will be some time before the mental health impact on healthcare workers becomes clear, however, early studies in China confirm that caring for those infected with the COVID-19 disease can impact mental health.[69] Specifically, a March 23, 2020 study published in *JAMA* found that among 1,257 healthcare workers treating COVID-19 patients in China, 50.4% reported symptoms of depression, 44.6% symptoms of anxiety, 34.0% insomnia, and 71.5% distress.[70] The study also noted that nurses, women, frontline healthcare workers, and those working in Wuhan, China – the center of the outbreak – reported more severe degrees of mental health symptoms than other healthcare workers.[71]

Although we cannot yet estimate the number of mental health claims that will be filed, an examination of the Rating Board's Unit Statistical data provides some insight into the potential cost of a mental health claim. Approximately 200-300 compensable mental health claims are reported to the Rating Board each year.[72] Of those claims, 75% are medical only claims with an average incurred medical cost of $1,369.[73] The remaining 25% of mental health claims involve lost-time and are reported with an average incurred indemnity loss amount of $80,000 and average medical severity of $50,000, for a total average severity of $130,000.

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69 *See* Lai, Jianbo, and Simeng Ma, *et al*., "Factors Associated with Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019" *JAMA Network,* March 23, 2020; https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2763229.

70 *See id.*

71 *See id.*

72 Rating Board Unit Statistical Data, Mental Health Claims, Accident Years 2013-2017.

73 *See id.*

B. The Impact of the Stay-At-Home Order

i. *Reduction in Claim Activity*

Preliminary information obtained from multiple stakeholders suggests that the number of non-COVID-19 claims has decreased significantly in March, April, and May of 2020. The decrease in claims filed during this time period is likely a result of Governor Cuomo's March 20, 2020 "New York State on Pause" Executive Order and the related economic downturn.[74] It is possible that the impact of COVID-19 claims will be mitigated by a decrease in non-COVID-19 claims filed in 2020.[75] However, it is presently unknown whether reduced non-COVID-19 claim activity will be offset by a decrease in workers' compensation premiums charged to employers.

ii. *Medical Treatment for Pre-COVID-19 Claims*

The COVID-19 pandemic and the public orders that were issued to limit transmission of the virus also likely hindered current workers' compensation claimants' efforts to obtain medical treatment such as surgeries, doctor's visits, and rehabilitation. A study published by the Commonwealth Fund suggests that by early April 2020, the number of visits to ambulatory care practices declined by nearly 60%.[76] Further, while all specialties experienced declines in visits, larger declines were evident among surgical specialties.[77] It is reasonable to expect that in some instances, delay in receiving medical treatment may negatively impact treatment outcomes and extend the time it takes for claimants to reach maximum medical improvement and return to work.

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[74] *See* Governor Cuomo's March 20, 2020 Executive Order at https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/EO_202.8.pdf.

[75] The significant shift to a work-from-home environment in the spring of 2020 will likely lead to a change in the mix of claims and costs.

[76] *See* Mehrotra, Ateev, and Michael Chernew, *et al.*, "The Impact of the COVID-19 Pandemic on Outpatient Visits: A Rebound Emerges" *The Commonwealth Fund*, May 19, 2020; https://www.commonwealthfund.org/publications/2020/apr/impact-covid-19-outpatient-visits.

[77] *See id.*

C. Loss Adjustment Expenses

In addition to the medical and indemnity payments made for COVID-19 claims, insurers will also incur expenses associated with handling these claims. COVID-19 related cost estimates for the insured marketplace should account for these expenses.[78]

VI. Conclusion

There remains much uncertainty over the pandemic's impact on the New York State workers' compensation system. A variety of evolving factors will significantly influence the ultimate outcome, including the infection rate, the fatality rate, the claim filing rate, medical costs, and the average indemnity benefit. This research brief is a resource for stakeholders that provides an understanding of these factors and a framework for estimating the potential cost impact of COVID-19 claims. The Rating Board is committed to providing the marketplace with further research and analysis as more information becomes known.

[78] The Rating Board estimates that loss adjustment expenses in New York State represent, on average, 17.8% of the loss amount. *See* the Rating Board's May 2020 Aggregate Loss Cost Filing at Exhibit F, p. 12; https://www.nycirb.org/Loss_Cost/2020_Loss_Cost_Filing.pdf. It bears noting that claims handling expenses (a) may vary by insurer, (b) may be different for COVID-19 claims than for non-COVID-19 claims; and (c) contain certain fixed costs incurred prior to the pandemic that may remain unchanged.