



Research Note

Long COVID-19 Claim Characteristics and Treatment in California Workers' Compensation

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Executive Summary

Shortly after Governor Newsom declared a state of emergency due to the COVID-19 pandemic in March of 2020, a flood of COVID-19 workers' compensation claims was reported to the California Division of Workers' Compensation. Data from the CWCI Claim Characteristics and Trends Interactive Application shows nearly 350,000 claims filed between 2020 and the end of 2024, more than 90 percent of which involved 2020-2022 injury dates.¹ While most of these claims were relatively inexpensive due to little to no medical intervention, others involved long-term medical conditions that either impeded or prevented the workers from returning to their jobs and resulted in significant cost. This study examines these "Long COVID claims" and compares the medical treatment, claim and payment duration, and claimant characteristics such as age and gender associated with the Long COVID claims to those associated with COVID-19 claims that resolved quickly.² Key findings include:

- Medical treatment was provided in 14.6 percent of all COVID-19 claims during the years studied, but only 4.7 percent of all COVID-19 claims were classified as Long COVID because they had medical treatment that continued for 90 or more days after the date of injury.
- Although Long COVID claims represent only 4.7 percent of all COVID-19 claims, they account for 82.1 percent of the total medical payments on COVID-19 claims.
- Long COVID can involve multiple diagnoses and may affect one or more organ systems. The top 10 diagnosis categories associated with Long COVID claims span a wide range of organ systems, including respiratory (17.8 percent); circulatory (9.0 percent); nervous (8.7 percent); connective, soft tissue and bone disorders (5.2 percent); endocrine systems (4.9 percent); as well as mental health (4.4 percent), and digestive conditions (3.4 percent). Together these categories account for over 80 percent of all diagnoses, highlighting the multisystem nature of Long COVID.
- Long COVID claims reflect a broader range of service utilization compared to COVID claims. For COVID claims lasting less than 90 days, Evaluation & Management (E&M) services account for 79.9 percent of total outpatient medical payments. In contrast, for Long COVID claims, E&M services represent a smaller share (34.6 percent), with other service categories, such as Physical Medicine (11.6 percent), Pharmacy (10.6 percent), Medical Treatment (9.0 percent), Surgery (5.6

¹ Source data was provided by the California Division of Workers' Compensation and compiled into the CWCI Claim Characteristics and Trends Interactive Application, Rev. 4/18/25 https://www.cwci.org/statewide_claims.html

² In this analysis, Long COVID claims are defined as those involving any medical treatment occurring 90 days or more after the date of injury. Throughout the report, the term 'COVID' refers specifically to COVID-19 claims involving less than 90 days of treatment or no medical treatment at all.

percent), and Mental Health (5.6 percent), contributing a larger share of total outpatient medical payments.

- There are significant differences in the distribution of Long COVID and COVID claims based on claimant age. Long COVID is more prevalent among injured workers over the age of 45, while shorter-duration COVID cases are more common among workers under 45. In contrast, no significant differences were observed in gender or regional distributions between COVID and Long COVID claims.

Background

According to the National Academies of Sciences, Engineering, and Medicine (NASEM),³ Long COVID⁴ is defined as “An infection-associated chronic condition that occurs after SARS-CoV-2 infection and is present for at least 3 months as a continuous, relapsing and remitting, or progressive disease state that affects one or more organ systems.”

As noted in the NASEM definition, any internal organ can be involved in a Long COVID diagnosis, with patients presenting single or multiple symptoms leading to single or multiple diagnosable conditions. Given the potential for multiple internal organs to be involved in a diagnosis, Long COVID is likely not a single condition but a “constellation of overlapping consequences of infection.” As a result, Long COVID research remains in its early stages despite five years of overall COVID diagnoses and an estimated 17 million U.S. adults having Long COVID according to the Centers for Disease Control and Prevention. According to a 2023 study by non-profit researcher the de Beaumont Foundation, only 7 percent of doctors are “very confident” about diagnosing Long COVID, and only 4 percent are confident in their ability to treat the condition, the latter exacerbated by a lack of FDA-approved treatment drugs.⁵ The results of this analysis reveal the multitude of body parts associated with Long COVID diagnoses and indicate that most payments for medical treatment for a Long COVID diagnosis last well beyond the first year of provided services.

Several initial studies of Long COVID reported a greater impact on females. A January 2025 study from the Journal of the American Medical Association (JAMA) studied 12,276 individuals to determine gender-related differences in Long COVID risk (*i.e.*, age, pregnancy, and menopausal status). The study found that women generally have about 30-50 percent higher risk of developing Long COVID than men, with the exception of young adults (18-39), where no significant gender difference was observed.⁶ This analysis examines age and gender differences in California workers' compensation Long COVID claims and COVID claims with less than 90 days of treatment, with the results detailed in Appendix 1 of the report.

³ National Academies of Sciences, Engineering, and Medicine. *A long COVID definition: a chronic, systemic disease state with profound consequences*. Washington, DC: National Academies Press, 2024 (<https://nap.nationalacademies.org/catalog/27768/a-long-covid-definition-a-chronic-systemic-disease-state-with>)

⁴ Hereafter, the term ‘COVID’ refers specifically to COVID claims involving less than 90 days of medical treatment or none—unless otherwise specified.

⁵ de Beaumont Foundation. (2023, March). Poll: Physicians agree Long COVID is a problem but are unprepared to treat it. <https://debeaumont.org/wp-content/uploads/2023/03/Long-COVID-Brief.pdf>

⁶ Journal of the American Medical Association: Shah DP, Thaweethai T, Karlson EW, et al. Sex Differences in Long COVID. *JAMA Netw Open*. 2025;8(1):e2455430. doi:10.1001/jamanetworkopen.2024.55430

Data and Methods

The authors used claims data from CWCI's Industry Research Information System (IRIS)⁷ database to identify 126,397 COVID and Long COVID claims with 2020 through 2022 injury dates, valued as of June 30, 2024. The study sample included both insured and self-insured claims that had COVID-19 as the nature or cause of injury code. Claims originating in the years after 2022 were excluded from the analysis as the 2020-2022 period is widely recognized as the peak of COVID-19 infections.⁸ The number of COVID-19 workers' compensation claims declined sharply in accident year 2023 and continued to fall in 2024.⁹ Additionally, because the analysis focuses on longer-duration claims, those from more recent injury dates were excluded due to insufficient time to develop.

To differentiate Long COVID from COVID claims, the authors adopted the duration threshold from the NASEM definition, which characterizes Long COVID as persisting for at least three months following infection. In this analysis, Long COVID claims were defined as those involving any medical treatment occurring 90 days or more after the date of injury, while COVID claims were defined as those with less than 90 days of medical treatment or no treatment at all.

Results

Medical Treatment. A review of the medical data from the claims in the study sample revealed the following regarding the utilization of medical services and the duration of treatment for COVID claims:

- Only 14.6 percent of all COVID-19 claims¹⁰ received medical treatment
- Only 4.7 percent of all COVID-19 claims had any medical treatment occurring 90 days or more from the date of injury and were therefore classified as Long COVID
- Although Long COVID claims represented only 4.7 percent of all COVID-19 claims, they accounted for 82.1 percent of the total medical payments associated with COVID-19 claims, \$105.5 million out of \$128.4 million.

Exhibits 1 and 2 illustrate these findings.

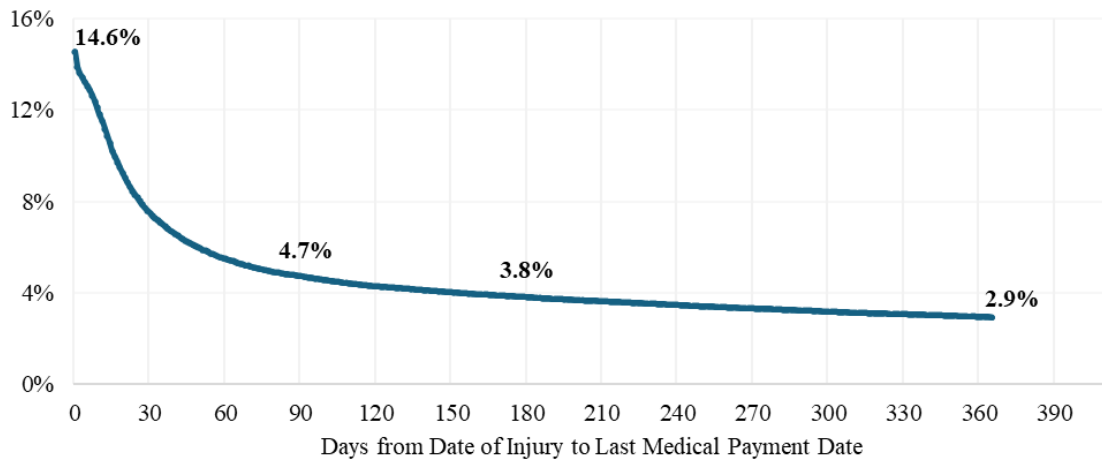
⁷ IRIS is CWCI's proprietary database of insured policies and self-insured employers and their associated claims.

⁸ On October 17, 2022, California Governor Gavin Newsom declared that as of February 28, 2023, California's COVID-19 state of emergency would end, marking the end of three years of emergency measures that had been implemented to combat the pandemic.

⁹ The authors compiled 10,109 and 1,579 COVID and Long COVID claims in IRIS with injury dates in 2023 and 2024, respectively.

¹⁰ Including Long COVID and COVID claims.

**Exhibit 1: Percentage of COVID-19 Claims with Medical Treatment by Duration
(AY 2020 – AY 2022)**



**Exhibit 2: Distribution of Claims and Treatment Payments: COVID & Long COVID Claims
(AY 2020 – AY 2022)**

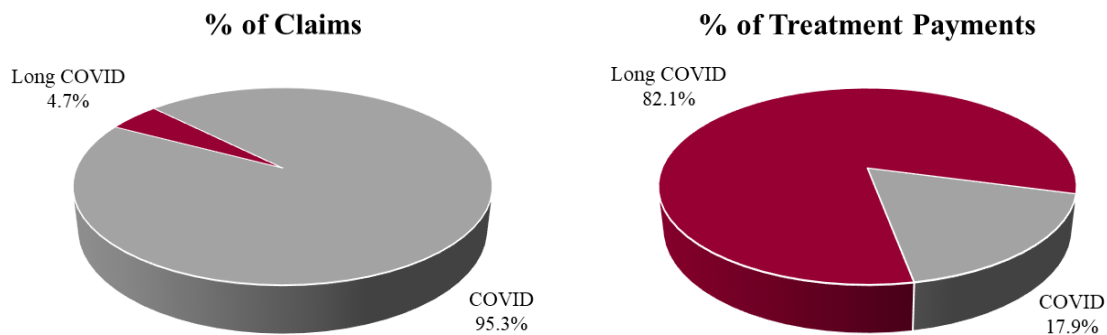


Exhibit 3 summarizes the distribution for all COVID-19 claims with medical payments across the three accident years studied. For AYs 2020 and 2021, two-thirds of the claims had a duration of less than 90 days, while one-third were classified as Long COVID claims. In AY 2022 the distribution shifted slightly, as Long COVID claims decreased from 33.5 percent to 29.0 percent of all COVID cases with medical payments.

Exhibit 3: Distribution of COVID & Long COVID Claims w/Medical Payments by Accident Year

COVID-19 Claim Type	2020	2021	2022
COVID	66.7%	66.5%	71.0%
Long COVID	33.3%	33.5%	29.0%
Total	100%	100%	100%

Diagnosis Categories and Body Parts Involved. As noted earlier, Long COVID can affect several organs within the body and present as several different diagnoses. Researchers have found that widespread inflammation caused by COVID has lasting effects on the body including the lungs' ability to deliver oxygen, chronic gastrointestinal problems, worsened brain cognition leading to possible mental health issues, increased heart problems, and impaired blood flow leading to circulatory issues.¹¹ As shown in Exhibit 4, the top 10 diagnostic categories associated with Long COVID claims, excluding COVID-19 diagnoses, account for 80.3 percent of all recorded diagnoses.

Exhibit 4: Top 10 Diagnostic Categories for Long COVID Claims (AY 2020 – AY 2022)

Diagnostic Category	Percentage
Diseases and Disorders of the Respiratory System	17.8%
Symptoms, Signs and Abnormal Clinical and Laboratory Findings, NEC	13.2%
Infectious and Parasitic Diseases	9.3%
Diseases of the Circulatory System	9.0%
Diseases of the Nervous System	8.7%
Connective, Soft Tissue and Bone Disorders	5.2%
Endocrine, Nutritional and Metabolic Diseases	4.9%
Mental, Behavioral and Neurodevelopmental Disorders	4.4%
Spine - Diseases & Disorders	4.4%
Diseases and Disorders of the Digestive System	3.4%
Total	80.3%

The most affected body parts in COVID claims differ from those in Long COVID claims. While Internal Organs are more frequently involved in Long COVID claims (40.9 percent) than in COVID claims (30.6 percent), Body Systems are more commonly affected in COVID claims (33.7 percent) than in Long COVID claims (26.9 percent). Exhibit 5 shows the distribution of COVID and Long COVID claims based on the affected body part listed on the claims.

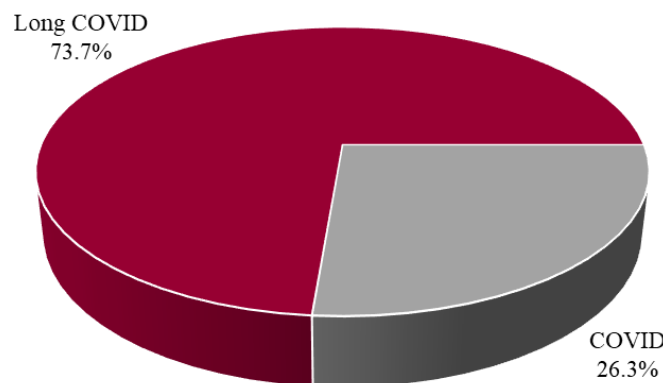
Exhibit 5: Distribution of COVID & Long COVID Claims Across Body Parts (AY 2020 – AY 2022)

Body Part	COVID (<90 Days)	Long COVID (≥90 Days)
Body Systems	33.7%	26.9%
Internal Organs	30.6%	40.9%
Lungs	20.7%	20.1%
Multiple Body Parts	13.6%	8.9%
Mental Disorders	1.0%	1.0%
Other	0.4%	2.2%
Total	100%	100%

¹¹ Blum, Dani; Agrawal, Nina; Callahan, Alice. "Covid's Lasting Effects on the Body." The New York Times. March 10, 2025, <https://www.nytimes.com/2025/03/10/well/covid-long-term-health-damage.html>.

Total Claim Payments. Medical, indemnity, and expense payments for all COVID-19 claims in the study sample totaled \$350.6 million, with Long COVID claims accounting for \$258.3 million, or 73.7 percent (Exhibit 6). The breakdown of average medical, indemnity, and total claim payments by body part is shown in Exhibit 7. The data show that the average claim cost for Long COVID is significantly higher than for COVID claims, regardless of the body part involved. Overall, Long COVID cases incur average medical payments that are 105 times higher and average indemnity payments that are 37 times higher than other COVID claims. The difference in payments is especially pronounced when the injury involves the lungs, multiple body parts, and “other” body parts.

Exhibit 6: Distribution of Total Claim Payments: COVID & Long COVID (AY 2020 – AY 2022)



**Exhibit 7: Average Payments per Claim by Body Part and Payment Type
(AY 2020 – AY 2022)**

Body Part	Medical*		Indemnity		Total Claim Paid	
	COVID	Long COVID	COVID	Long COVID	COVID	Long COVID
Body Systems	\$152	\$15,146	\$482	\$19,641	\$689	\$38,273
Internal Organs	\$278	\$24,523	\$384	\$15,525	\$691	\$41,283
Lungs	\$207	\$25,650	\$716	\$22,216	\$1,042	\$53,842
Mental Disorders	\$693	\$12,204	\$586	\$10,854	\$1,397	\$27,608
Multiple Body Parts	\$80	\$17,134	\$464	\$22,210	\$624	\$46,009
Other	\$211	\$26,477	\$487	\$17,968	\$863	\$49,949
Unknown	\$742	\$7,902	\$368	\$15,680	\$1,233	\$24,026
Total	\$203	\$21,258	\$498	\$18,527	\$766	\$43,138

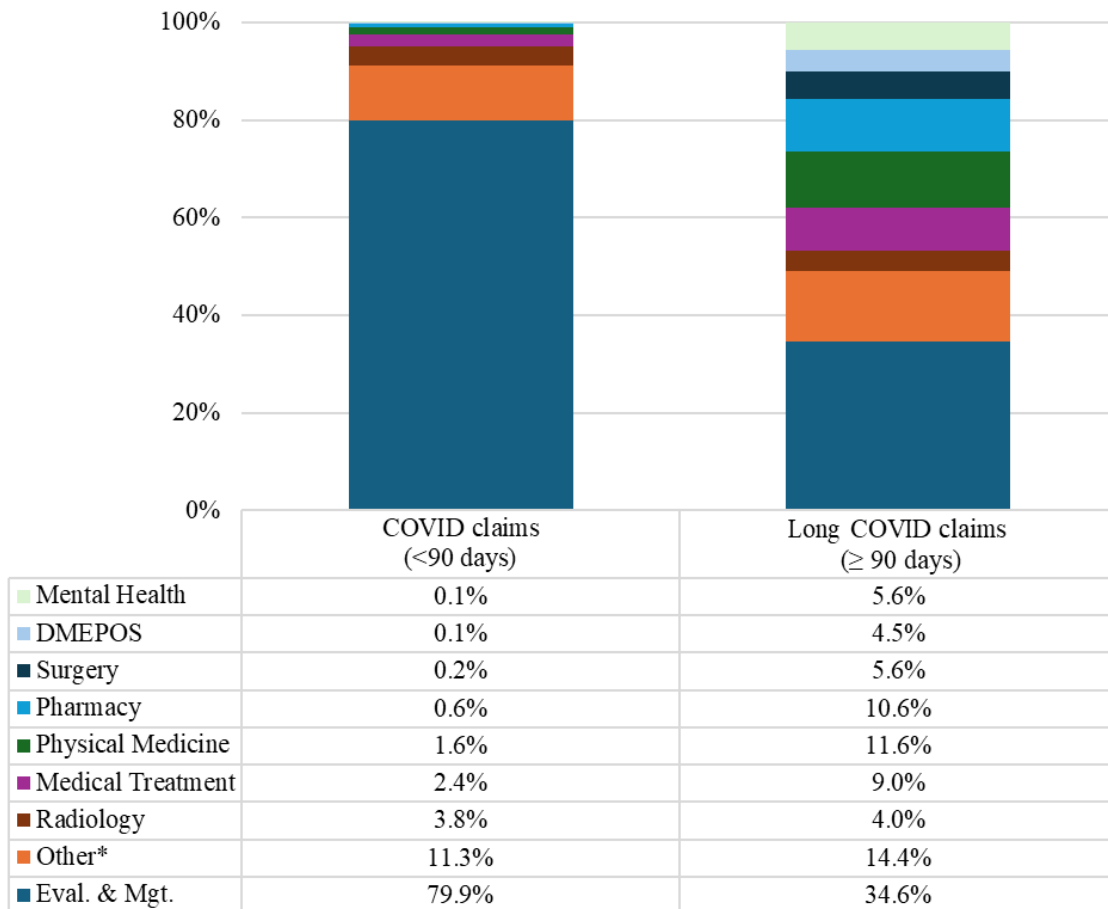
Note: Medical payments include treatment and medical-legal services.

Utilization. The IRIS medical bill review data shows that the utilization of a diverse mix of medical services increases significantly after the first 90 days of duration when COVID claims transition into Long COVID claims.

Exhibit 8 shows the breakdown of outpatient medical payments by service category for COVID and Long COVID claims. For COVID claims, reimbursements for E&M services, most of which represented office visit fees, accounted for 79.9 percent of the medical care payments. However, at the 90-day benchmark, when COVID claims became Long COVID claims, the distribution of medical services shifted as additional services, most notably Physical Medicine, Medical Treatment, Pharmacy, and Mental Health, were introduced into the mix of services.

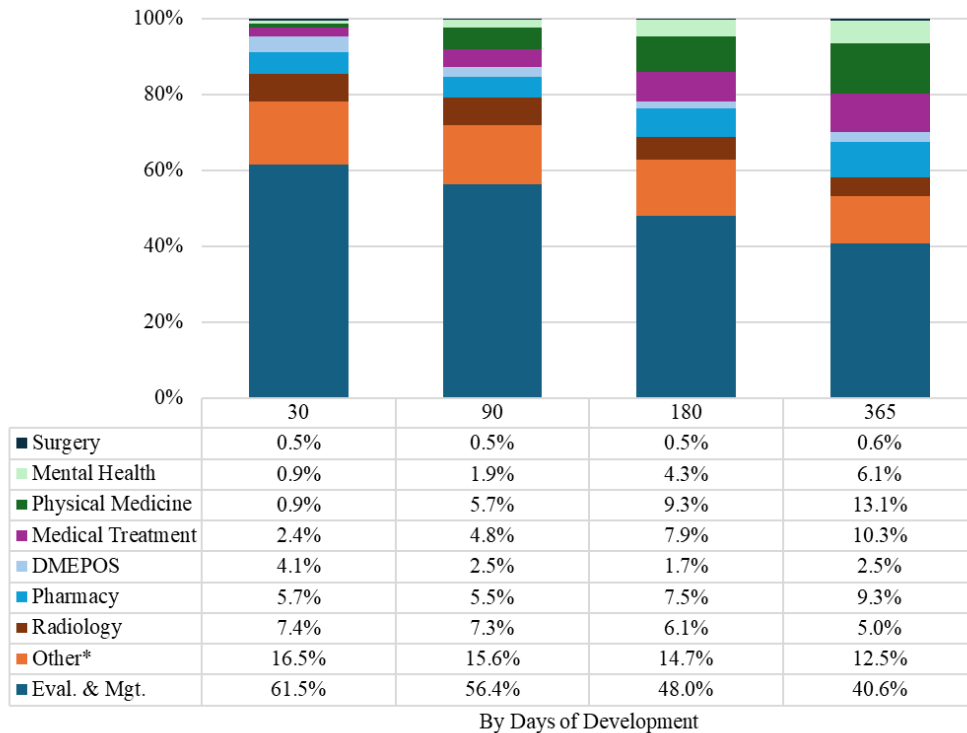
Exhibit 8: Distribution of Outpatient Medical Payments by Service Category

COVID & Long COVID Claims (AY 2020 – AY 2022)



*Other include path & lab, ambulance services, anesthesia, revenue codes, acupuncture, chiro, dental, special services, home health, and other miscellaneous codes. The data exclude claims involving inpatient stays.

Exhibit 9 shows the outpatient medical payment development by service category for Long COVID claims with treatment extending beyond 365 days from the date of injury. During the first year of development, payments for E&M services declined from 61.5 percent to 40.6 percent of total medical payments. Meanwhile, payments for other service types increased: Physical Medicine rose from 0.9 percent to 13.1 percent; Medical Treatment from 2.4 percent to 10.3 percent; Mental Health from 0.9 percent to 6.1 percent; and Pharmacy from 5.7 percent to 9.3 percent.

**Exhibit 9: Distribution of Outpatient Medical Payments by Service Category and Development
Long COVID Claims of 365+ days (AY 2020 – AY 2022)**

*Other include path & lab, ambulance services, anesthesia, revenue codes, acupuncture, chiro, dental, special services, home health, and other miscellaneous codes. The data exclude claims involving inpatient stays.

Conclusion

Although most COVID-19 workers' compensation claims involved no medical treatment or resolved within 90 days, a smaller subset, classified as Long COVID, represented a significant share of total medical payments. Long COVID claims made up just 4.7 percent of all COVID claims but accounted for 82.1 percent of total medical payments. Long COVID claims also involved a broader mix of services beyond E&M, including Physical Medicine, Pharmacy, Mental Health, and Surgery services. Diagnostically, they spanned multiple organ systems, including respiratory, circulatory, nervous, digestive, endocrine, and musculoskeletal systems, underscoring the complexity of Long COVID. Finally, Long COVID is more prevalent among workers over the age of 45, while shorter-duration cases that resolve without becoming Long COVID cases are more common among younger workers.

From 2020 through 2024, nearly 350,000 COVID-19 claims were filed in the California workers' compensation system.¹² While the number of new claims declined sharply in the past two years, some of these existing claims remain open,¹³ so CWCI will continue to monitor the incidence, characteristics, and costs of COVID and Long COVID claims in the California workers' compensation system.

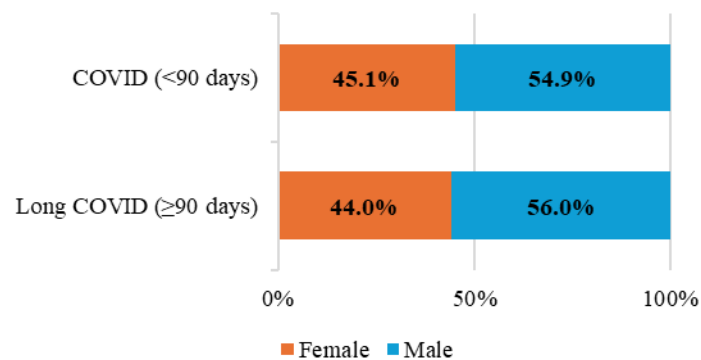
¹² Claim Characteristics and Trends Interactive Application based on WCIS data. California Workers' Compensation Institute, Rev. 4/18/25. https://www.cwci.org/statewide_claims.html

¹³ IRIS data valued as of June 30, 2024 show 2.5 percent of 2023 COVID-19 claims and 22.0 percent of 2024 COVID-19 claims remain open.

Appendix 1: Distribution of COVID and Long COVID Claims by Age and Gender

Exhibit 10 shows the gender distribution of COVID and Long COVID claims for the three accident years studied. Males accounted for 54.9 percent of the COVID claims lasting less than 90 days, and a slightly higher proportion (56.0 percent) of the Long COVID claims. These proportions were similar to the gender breakdown for the California civilian work force during this period,¹⁴ but during this same period, males accounted for 58.4 percent of all California workers' compensation claims,¹⁵ so relative to other types of injury and illness claims, males comprised a smaller share of the COVID and Long COVID claimants, while females represented a larger share.

**Exhibit 10: Distribution of COVID Claims vs. Long COVID Claims by Gender
(AY 2020 – AY 2022)**

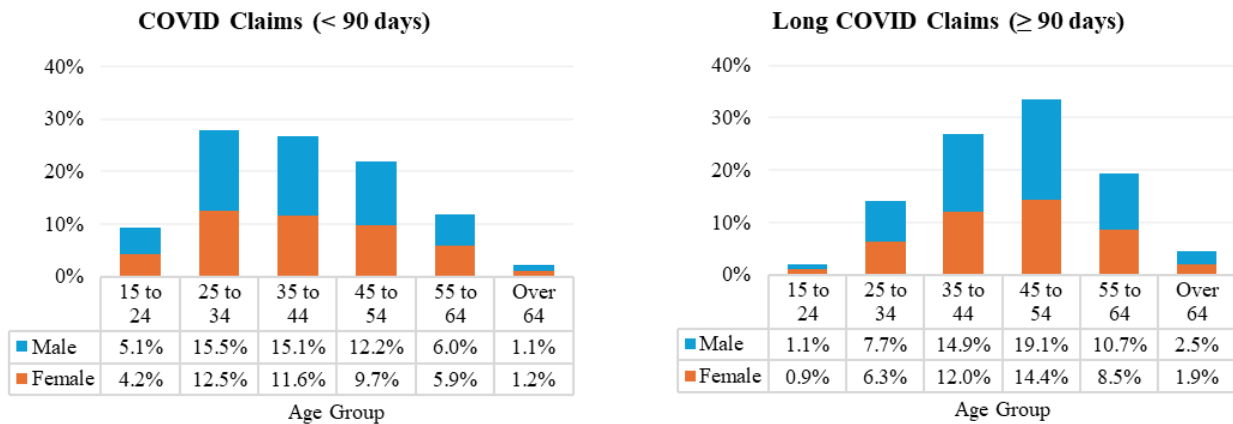


¹⁴ The California Employment Development Department reports that males accounted for 53.9 percent of the California workforce in 2020 and 2021, and 55.0 percent of the state's workforce in 2022.

¹⁵ CWCI IRIS Regional Scorecard Application, valued as of June 2024.

Exhibit 11 shows the distributions by age group and gender for AY 2020 - AY 2022 COVID and Long COVID claims. A majority (57.1 percent) of the Long COVID claimants were aged 45 and older, while an even larger majority (63.9 percent) of the shorter-duration COVID cases involved workers under 45. Although the medical literature cited earlier indicated that women aged 55 and older are at greater risk of developing Long COVID and its associated diagnoses than men in that age group, the California workers' compensation claim data show that among the working age population, the proportion of Long COVID claims by females is consistently lower than that of males across all age groups. This finding may reflect the overall higher incidence of work-related injuries among males.

Exhibit 11: Distribution of COVID Claims vs. Long COVID Claims by Age Groups and Gender (AY 2020 – AY 2022)

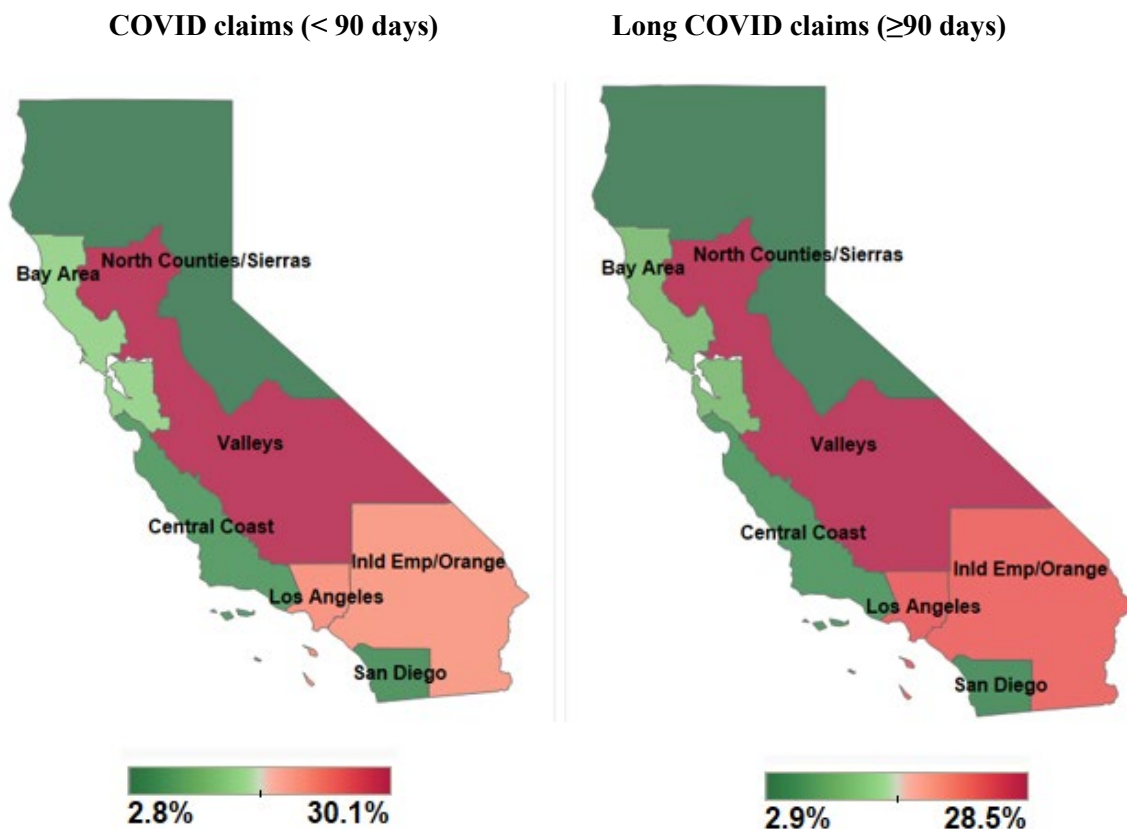


Note: Percentages represent the share of claims for each age and gender combination. Totals may not equal exactly 100 percent due to rounding.

Appendix 2: Regional and Industry Differences

Heat maps of COVID and Long COVID claims by region show nearly identical distributions across different parts of the state (Exhibit 12). The Central Valley region had the largest share of both COVID and Long COVID claims, while in both Los Angeles County and the Inland Empire/Orange County, the share of Long COVID claims was about 3 percentage points higher than the share of the COVID claims. The largely rural and sparsely populated North Counties/Sierra region had the lowest percentage of COVID and Long COVID claims in the state, followed by the Central Coast, San Diego County, and the Bay Area.

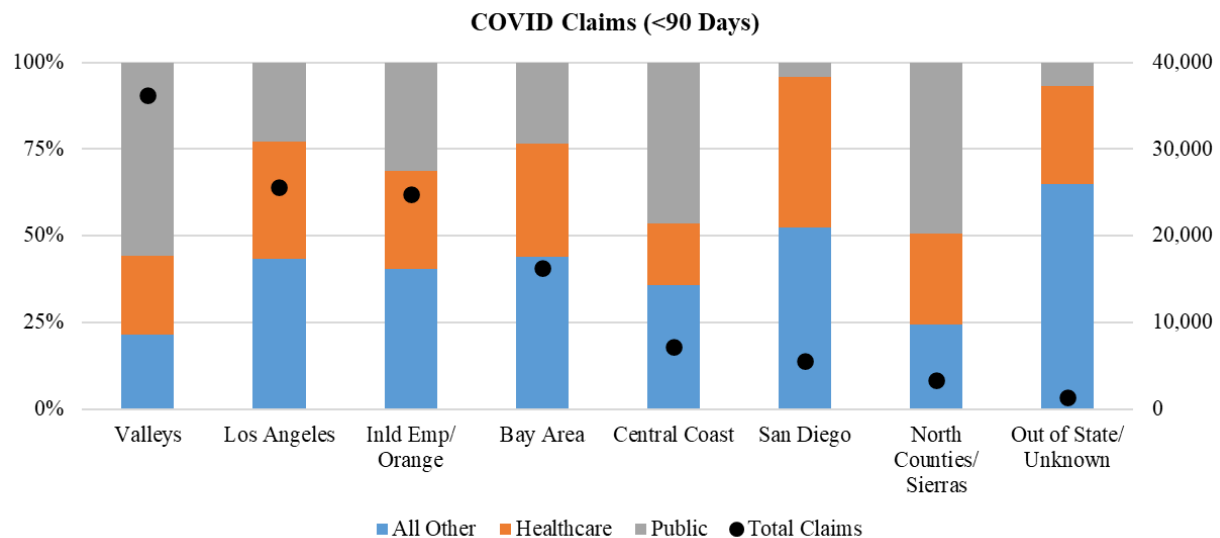
**Exhibit 12: Distribution of COVID & Long COVID Claims by Region
(AY 2020 – AY 2022)**



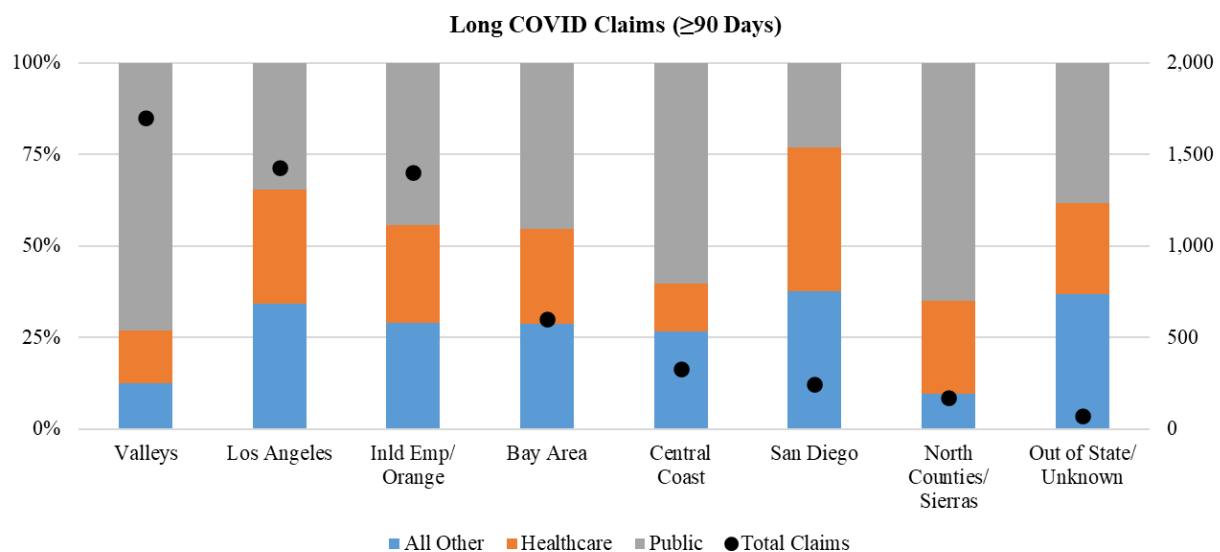
The Central Valley region accounted for nearly half (47.0 percent) of all Public Administration COVID claims in the state between 2020 and 2022. While its share of the Public Administration Long COVID claims was six-percentage points lower (41.0 percent), that was still double the proportion noted for the next-highest region (Inland Empire/Orange County).

Exhibit 13 shows the distribution of COVID and Long COVID claims across three industry categories—Healthcare, Public Administration, and All Other industries—by region. Notably, within all seven regions of the state, the percentage of Long COVID claims coming from Public Administration employees was higher than the percentage of COVID claims coming from this sector. Conversely, in every region, the percentage of Long COVID claims from the Healthcare and “All Other” industries was lower than the percentage of COVID claims from those same industries.

Exhibit 13: Distribution of COVID & Long COVID Claims Across Industries Categories by Region (AY 2020 – AY 2022)



Note: Percentages are displayed on the left-side axis, and total claims are displayed on the right-side axis.



Note: Percentages are displayed on the left-side axis, and total claims are displayed on the right-side axis.

The “All Other” industry group from Exhibit 13 includes approximately 20 additional industries. When distributing COVID claim counts by the specific industries within the “All Other” industry category, the Institute noted that the ranking of the top 10 industries differed between COVID and Long COVID claims, as shown in Exhibit 14. For example, while the industries that comprised the top 10 list for COVID claims was nearly identical to that for Long COVID claims, the rankings of the industries within the top 10 lists differed. Manufacturing ranked first in the “All Other Industry” category for Long COVID claims, whereas Transportation & Warehousing held the top spot on the “All Other Industries” list for COVID claims. Similarly, within the “All Other” category, Food Services ranked third for COVID claims, but fourth for Long COVID claims, while Construction rounded out the top five for Long COVID claims despite ranking only seventh for COVID claims. Overall, the top 10 industries shown in Exhibit 14 accounted for about 88 percent of the COVID claims and about 87 percent of the Long COVID claims in the “All Other” industry groups.

**Exhibit 14: Top 10 All Other-Specific Industries by COVID Claim Count
(AY 2020 – AY 2022)**

COVID (<90 Days)	COVID %-age	Long COVID (≥90 Days)	Long COVID %-age
Transportation & Warehousing	29.2%	Manufacturing	15.8%
Retail Trade	13.0%	Retail Trade	15.5%
Food Services	9.1%	Transportation & Warehousing	10.5%
Manufacturing	8.6%	Food Services	9.1%
Clerical (8810)	5.9%	Construction	7.9%
Educational Services	5.5%	Admin/Support/Waste Mgmt	6.6%
Construction	5.2%	Wholesale Trade	6.3%
Admin/Support/Waste Mgmt	4.2%	Educational Services	6.2%
Agriculture	3.8%	Agriculture	5.1%
Professional/Scientific/Technical	3.3%	Professional/Scientific/Technical	4.0%
Total	87.9%	Total	86.8%

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California Workers' Compensation Institute

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