

Long Covid. An Emerging Challenge for Clinicians and Insurers

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Outline

- What is long Covid?
- Prevalence
- Disability
- Risk Factors
- Overlap with other illnesses
- Trajectories of recovery and phenotypes
- Objectively assessing impairments
- Therapeutic approaches
- Ongoing Research Initiatives
- Future of Long COVID

What is long COVID?

- Collection of symptoms in COVID-19 survivors
- Last weeks/months/years
- Varying degrees of disability
- Not limited to hospital survivors

Recovery from acute Covid-19 infection is quick...

“ The median time from onset to clinical recovery for mild cases is approximately 2 weeks and is 3-6 weeks for patients with severe or critical disease

”

*– The WHO-China Joint Mission Report,
February 28, 2020*

Social media disagrees, and “long COVID” is coined...

March 2020

BODY POLITIC HOME ABOUT ADVOCACY COVID-19 SHOP CONTACT US

COVID-19 SUPPORT GROUP

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When members of our team fell ill in March, we relied on each other for emotional support. In creating the COVID-19 support group, we wanted to provide others with that same opportunity to feel connected and supported through infection, symptoms, and recovery. As we continue to navigate the healing process, we could not be more grateful for the support group. It's been beautiful to watch others struggling with COVID-19 find community amidst isolation, affirm each other's experiences, and talk one another through tough nights. The group continues to be a source of strength and light in our lives, and we want to sincerely thank everyone who has been a part of this incredible community.

To support and learn more about Patient Led Research, a team that was formed in our group, click [here](#).

[RESOURCES](#) [JOIN THE GROUP](#) [PRESS](#)

May 2020

← **Thread**

Dr Elisa Perego @elisaperego78 · May 20, 2020

The #LongCovid #COVID19 is starting to be addressed on major newspapers in Italy 🇮🇹 too: ~20% of tested patients remain covid + for at least 40 days 📌 . Prof from Tor Vergata University of Rome notes: there is a lot we don't know about this virus.

Personal narratives...

May 2020

the**bmj**opinion

Latest

Authors ▾

Topics ▾

Paul Garner: For 7 weeks I have been through a roller coaster of ill health, extreme emotions, and utter exhaustion

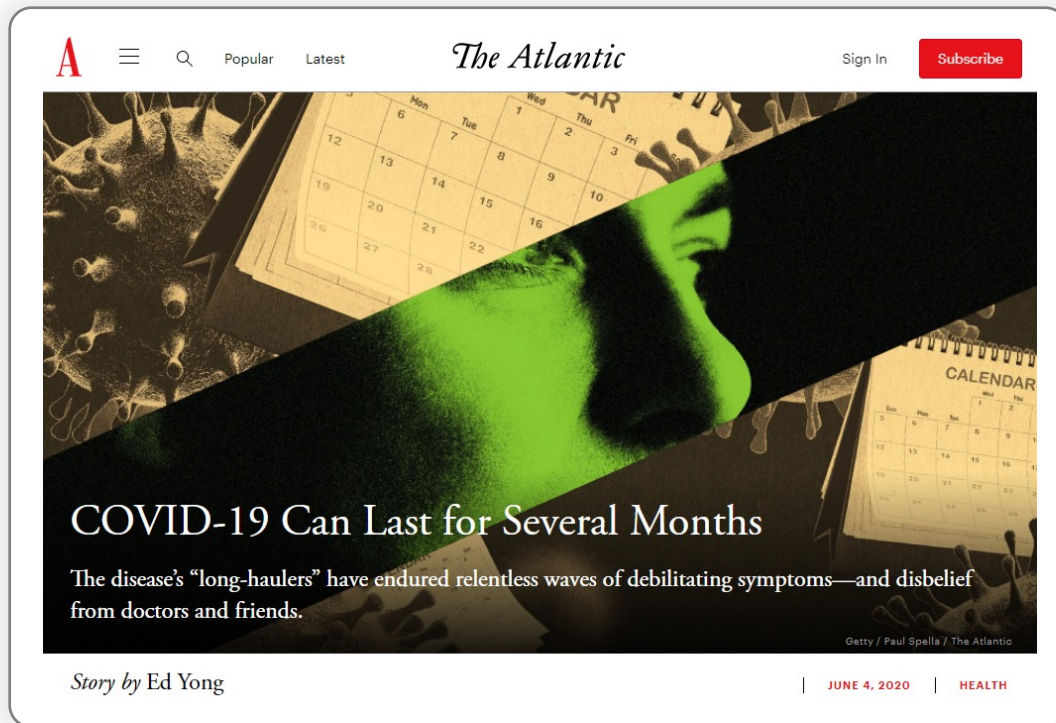
May 5, 2020

Paul Garner, professor of infectious diseases at Liverpool School of Tropical Medicine, discusses his experience of having covid-19



...and picked up by mainstream media

June 4, 2020



“ The disease’s “long-haulers” have endured relentless waves of debilitating symptoms and disbelief from doctors and friends ”

– Ed Yong, *The Atlantic*

Definitions

NICE National Institute for Health and Care Excellence

Ongoing symptomatic COVID-19

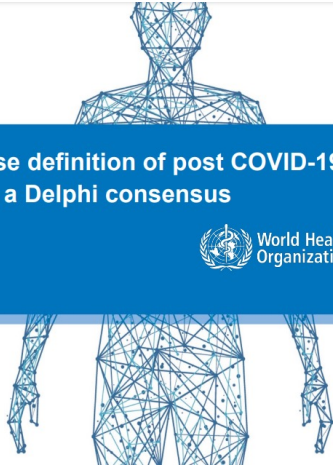
Signs and symptoms of COVID-19 from 4 weeks up to 12 weeks.

Post-COVID-19 syndrome

Signs and symptoms that develop during or after an infection consistent with COVID-19, continue for more than 12 weeks and are

A clinical case definition of post COVID-19 condition by a Delphi consensus

6 October 2021



*“Post COVID-19 condition occurs in individuals with a history of probable or confirmed SARS-CoV-2 infection, usually **3 months from the onset of COVID-19**, with symptoms that last for at least 2 months and cannot be explained by an alternative diagnosis.*”

Long COVID

Long COVID is broadly defined as signs, symptoms, and conditions that continue or develop after initial COVID-19 or SARS-CoV-2 infection. The signs, symptoms, and conditions

- are present four weeks or more after the initial phase of infection;
- may be multisystemic;
- and may present with a relapsing–remitting pattern and progression or worsening over time, with the possibility of severe and life-threatening events even months or years after infection.

Long COVID is not one condition. It represents many potentially overlapping entities, likely with different biological causes and different sets of risk factors and outcomes.

HHS, USA

CDC: "While most persons with COVID-19 recover and return to normal health, some patients can have symptoms that can last for weeks or even months after recovery from acute illness. Even people who are not hospitalized and who have mild illness can experience persistent or late symptoms."

An extraordinary array of symptoms

Clusters

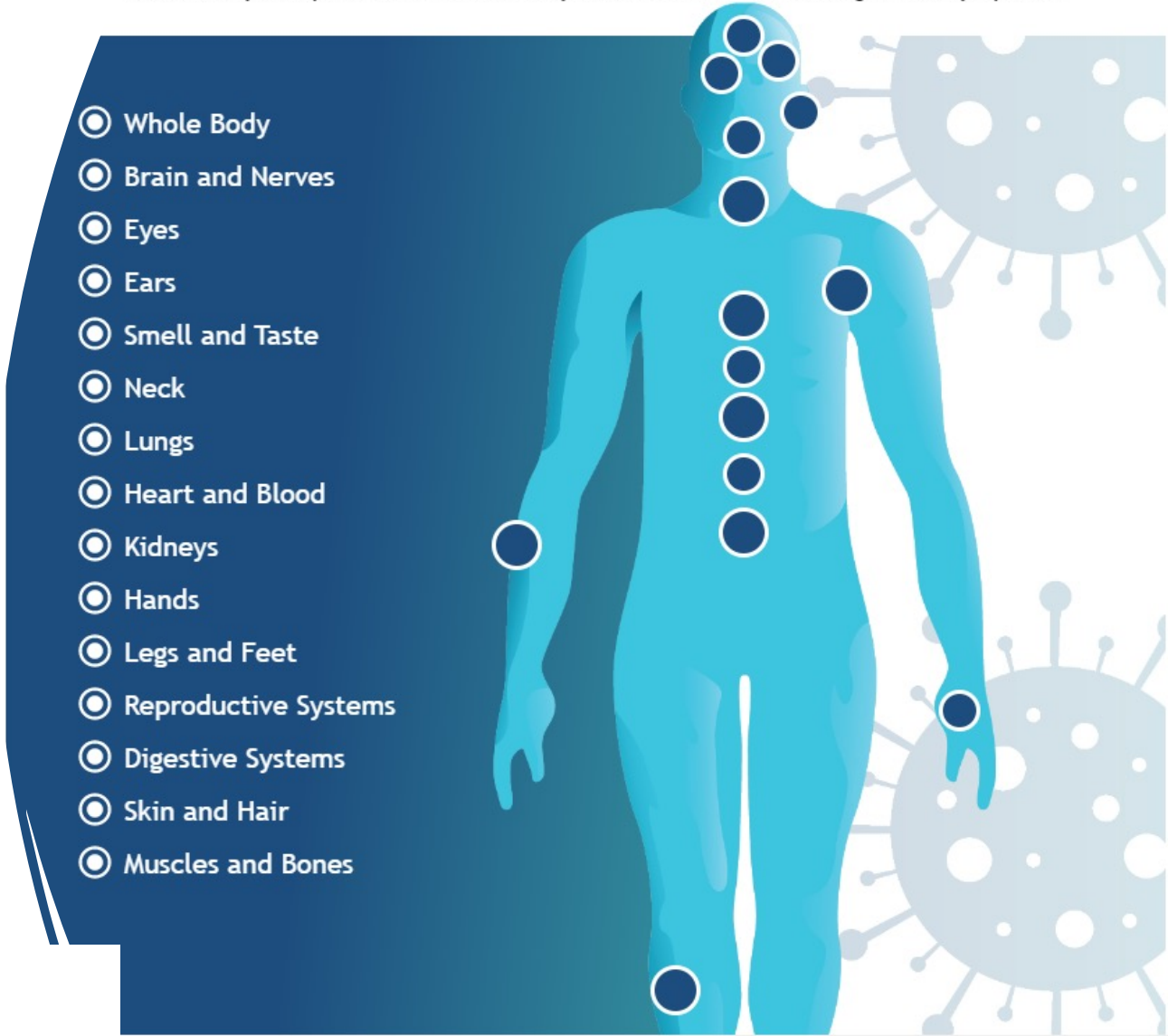
1. Cardiopulmonary
2. Neurological
3. 'Multi-organ symptoms'

medRxiv 2022.07.28

<https://doi.org/10.1101/2022.07.28.22278159>

Symptoms of Long COVID

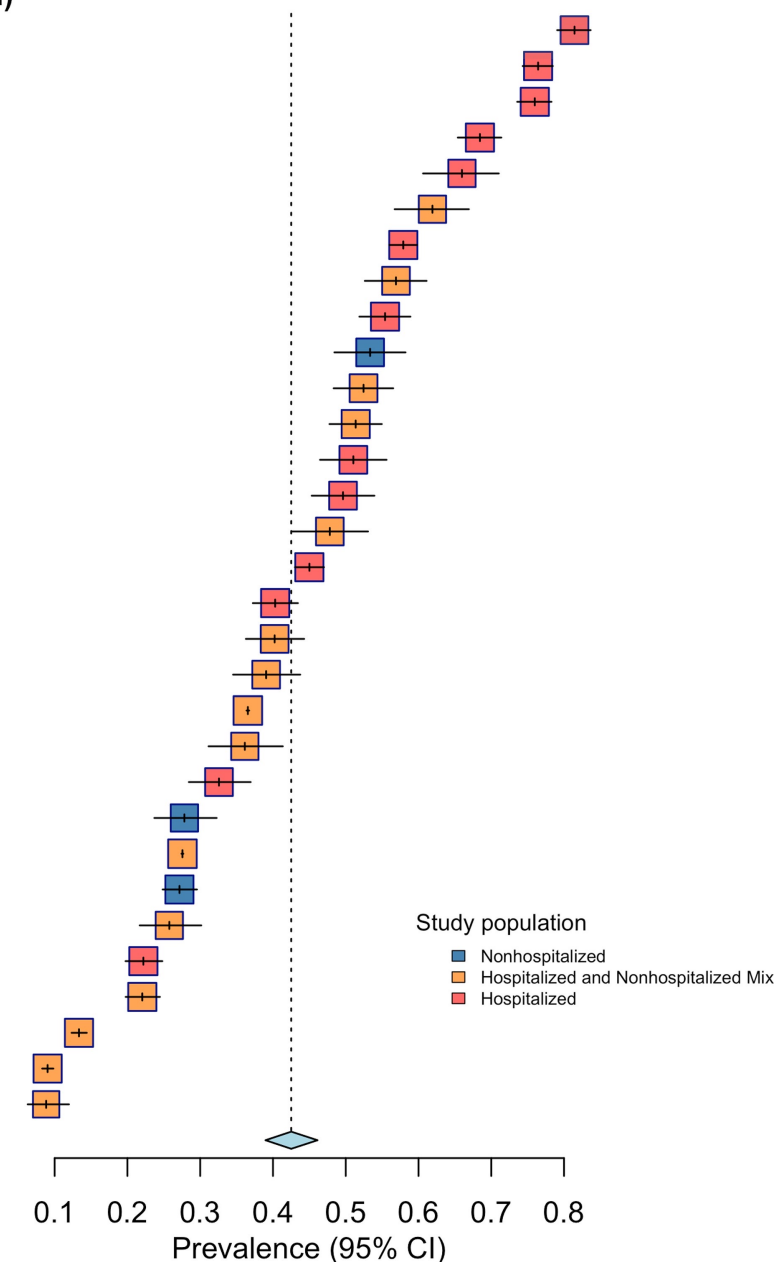
Click on any hotspot on the human body to learn more about Long COVID symptoms.

- 
- Whole Body
 - Brain and Nerves
 - Eyes
 - Ears
 - Smell and Taste
 - Neck
 - Lungs
 - Heart and Blood
 - Kidneys
 - Hands
 - Legs and Feet
 - Reproductive Systems
 - Digestive Systems
 - Skin and Hair
 - Muscles and Bones

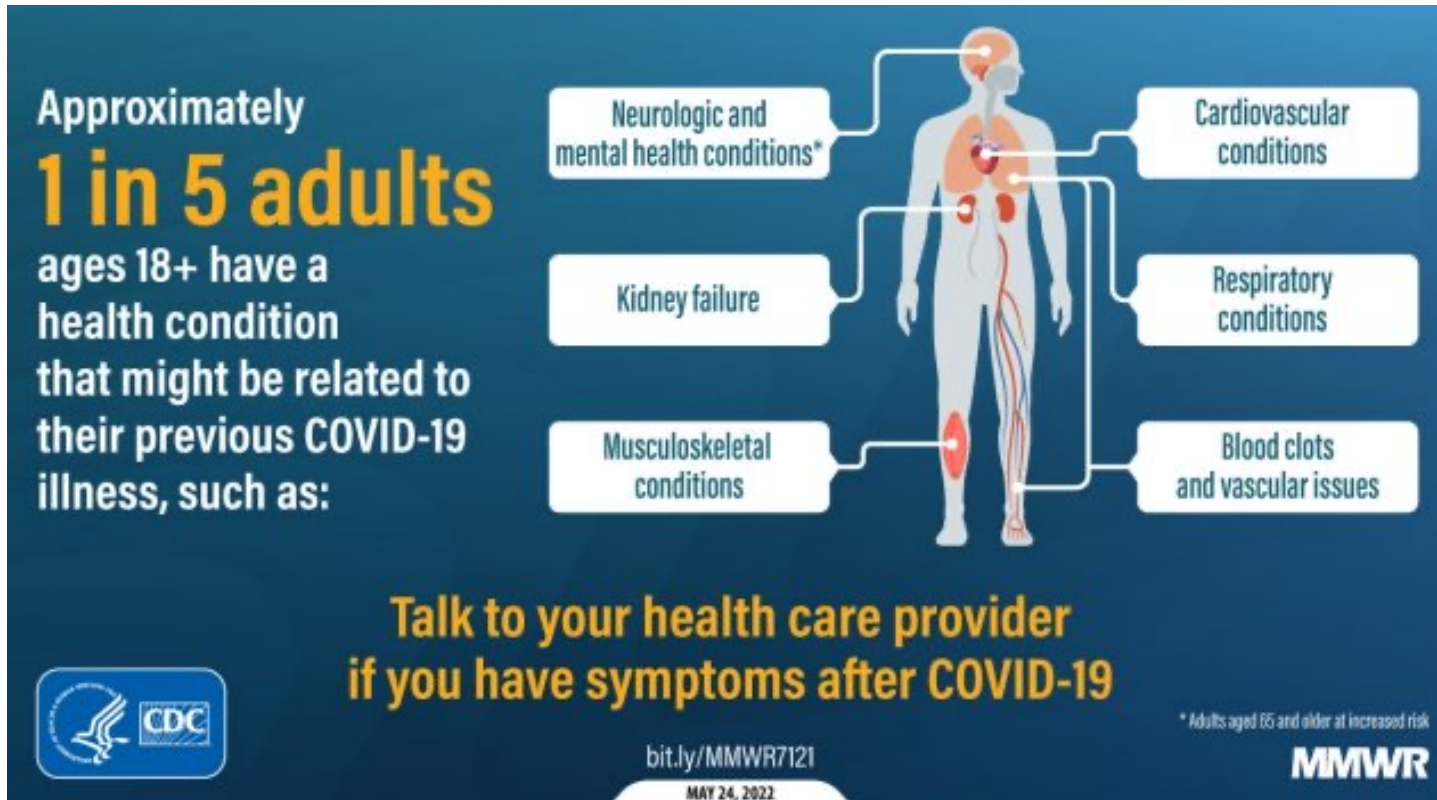
Worldwide prevalence of post-COVID condition or long COVID

Studies	Prevalence (95% CI)
Fernández-de-Las-Peñas et al Spain	0.81 [0.79; 0.84]
Huang et al China	0.76 [0.74; 0.78]
Wong-Chew et al Mexico	0.76 [0.74; 0.78]
Ghosn et al France	0.68 [0.65; 0.71]
Areekal et al India	0.66 [0.61; 0.71]
Lemhofer et al Germany	0.62 [0.57; 0.67]
Munblit et al Russia	0.58 [0.56; 0.60]
Maestre-Muñiz et al Spain	0.57 [0.53; 0.61]
Shang et al China	0.55 [0.52; 0.59]
Desgranges et al Switzerland	0.53 [0.48; 0.58]
Hirschtick et al USA	0.52 [0.48; 0.57]
Venturelli et al Italy	0.51 [0.48; 0.55]
Morin et al France	0.51 [0.46; 0.56]
Xiong et al China	0.50 [0.45; 0.54]
Yomogida et al USA	0.48 [0.43; 0.53]
Zhang et al China	0.45 [0.43; 0.47]
Budhiraja et al India	0.40 [0.37; 0.43]
Peghin et al Europe	0.40 [0.36; 0.44]
Righi et al Europe	0.39 [0.35; 0.44]
Taquet et al USA+others	0.37 [0.36; 0.37]
Cirulli et al USA	0.36 [0.31; 0.41]
Chopra et al USA	0.33 [0.28; 0.37]
Augustin et al Europe	0.28 [0.24; 0.32]
Spotnitz et al USA	0.28 [0.27; 0.28]
Huang et al California	0.27 [0.25; 0.30]
Menges et al Switzerland	0.26 [0.22; 0.30]
Evans et al UK	0.22 [0.20; 0.25]
Naik et al India	0.22 [0.20; 0.24]
Sudre et al UK/SE/US	0.13 [0.12; 0.14]
Perlis et al USA	0.09 [0.08; 0.10]
Lampl et al Germany	0.09 [0.06; 0.12]
Total	0.43 [0.39; 0.46]

Heterogeneity: $\chi^2_{30} = 13875.94$ ($P < .001$), $I^2 = 100\%$



CDC: 20% of adults have post-COVID conditions



"one in five COVID-19 survivors aged 18–64 years and one in four survivors aged ≥ 65 years experienced at least one incident condition that might be attributable to previous COVID-19".

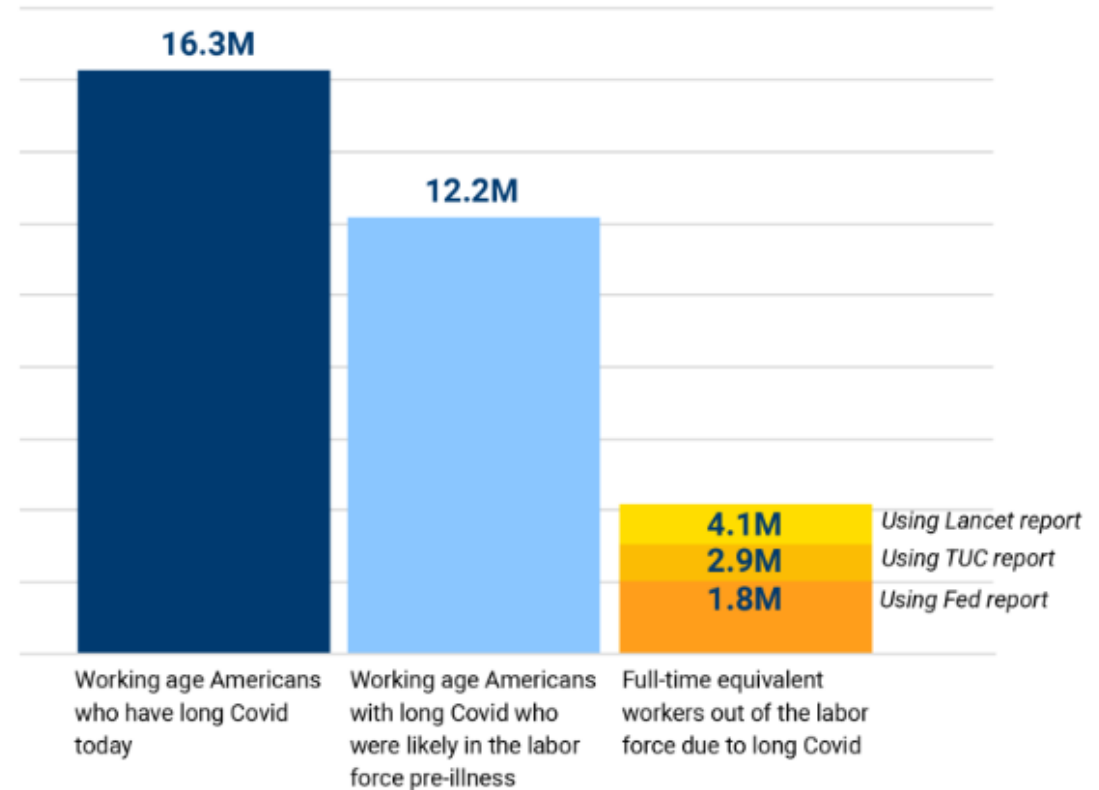
Recent reports of long COVID prevalence

Author/country	Date	Subjects	LC incidence post COVID-19
Taquet (TriNetx, USA)	2021	273,618 (EHR) H/C	36%
Hernandez (PCORnet, USA)	2022	195,366 (EHR) H/C	11%
Whitaker (React-2, UK)	2022	76,155 (Q) C	21.6%
Bull-Otterson (CDC, USA)	2022	353,164 (EHR) H/C	20%
Ballering (Netherlands)	2022	4231 (Q) C	12.7%
Subramanian (UK)	2022	486,149 (EHR) C	5.4%
Ayoukbhani (ONS, UK)	2022	221,164 (Q) H/C	10%
GBD (International)	2022	1.2M (mixed) H/C	6.2%

Estimates of disability

FIGURE 1

Number of Americans out of the labor force due to long Covid



Source: Author's calculation based on demographic data from US census, long Covid prevalence data from the Household Pulse Survey, labor force participation data from BLS, and the three studies cited above about labor force participation among people with long Covid (Fed, TUC, Lancet).

Long COVID disability in U.K.

Prevalence of ongoing symptoms following coronavirus (COVID-19) infection in the UK: 6 October 2022

“2.3 million (3.5%) of UK population self-report long COVID symptoms”

- **72%:** day to day activities ‘adversely affected’
- **21%:** day to day activities ‘limited a lot’
- **0.6%-2% of UK population**

Disability due to long COVID, in 2022

Source	Long Covid prevalence	Number of disabled (%'age of population)
ONS (UK)	2.3M (3.5%)*	0.48M-1.6M (0.6%-2%)
CDC (USA)	20M (7.6%)**	2M-4M (0.6-1.2%)

* >2 yrs. old

** >18yrs. old

What has been the impact on Disability Insurance?

Risk factors for long COVID

Hospitalization (ICU, ventilation)

BMI >30

Female sex

Decreasing age

Viral variant

Smoking

Social deprivation

Ethnicity

Unvaccinated

Multiple comorbidities

Long COVID is more than one illness...

Organ damage, e.g., pulmonary fibrosis

Post-ICU syndrome

Pre-morbid illness (deterioration of)

Post-viral fatigue Syndrome

Chronic Fatigue Syndrome

Somatic symptom disorder

Comparison with ME/CFS

Similarities are striking

Fatigue > 6 months is starting point for ME/CFS

Post-exertional fatigue

Neurocognitive complaints

Long-term outcomes of Covid-19, at 1 year

Author/country/source	Date	Subjects	Outcome
Xu, Al-Aly (VA, USA) ¹	Sep 2022	154,068	HR 1.42 neuro outcome
Xie, Al-Aly (VA, USA) ²	Feb 2022	153,760	HR 1.63 CV outcome HR 1.55 MACE
Xie, Al-Aly (VA, USA) ³	Mar 2022	181,280	HR 1.40 diabetes
Bhaskaran (OpenSAFELY, UK) ⁴	Jan 2022	24,673*	HR 2.2 death/readmission
Knight (NHS, UK) ⁵	Sep 2022	1.4M (EHR)	HR 1.80 VTE HR 1.34 arterial thrombosis

*hospitalised

¹ Xu Nature Medicine (2022) <https://doi.org/10.1038/s41591-022-02001>

² Xie Nat Med 28, 583–590 (2022). <https://doi.org/10.1038/s41591-022-01689-3>

³ Xie Lancet Diabetes Endocrinol 2022; 10: 311–21

⁴ Bhaskaran PLOS Medicine 19(1): e1003871. <https://doi.org/10.1371/journal.pmed.1003871>

⁵ Knight Circulation Vol 146, Issue 12, 20 September 2022; Pages 892-906

Long-term outcomes of Covid-19, at 2 years

Author/country/source	Date	Subjects	Outcome
Taquet (TriNetX, USA)	Aug 2022	1.4M (EHR)	HR 1.0 CVA HR 1.0 Parkinsonism HR 1.2 seizures/epilepsy HR 1.25 dementia