

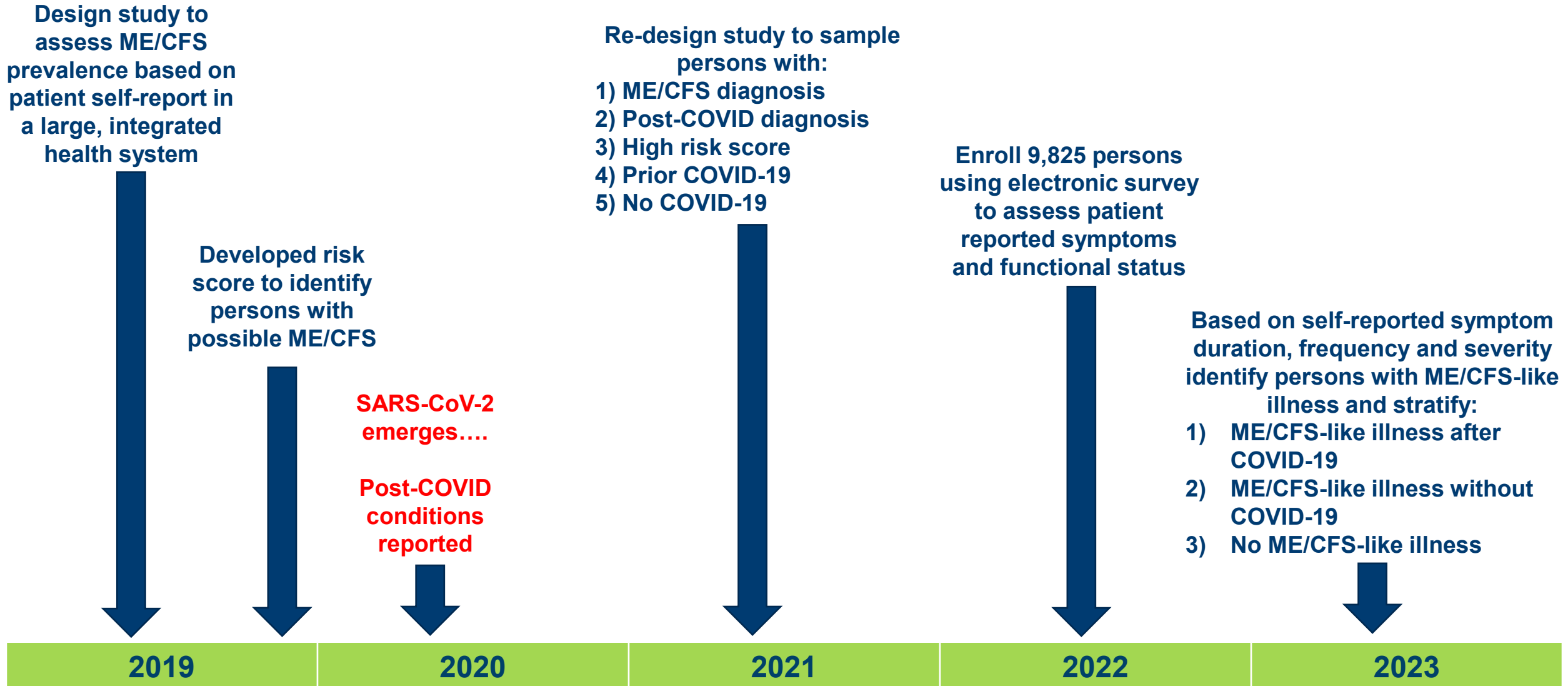
Myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS)-like illness following COVID-19 in a large integrated health system

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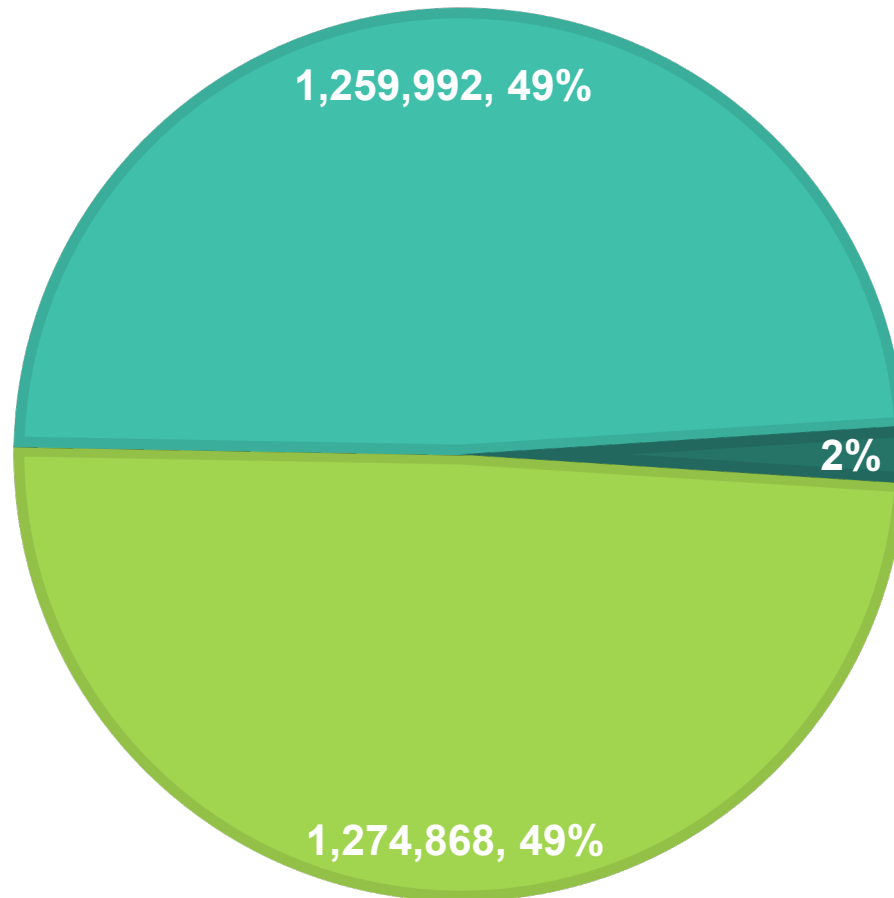
ME/CFS causes substantial morbidity, but ME/CFS both under-diagnosed and over-diagnosed in healthcare settings



50% of people in our health system had COVID-19

About 2% overall have ME/CFS-like illness

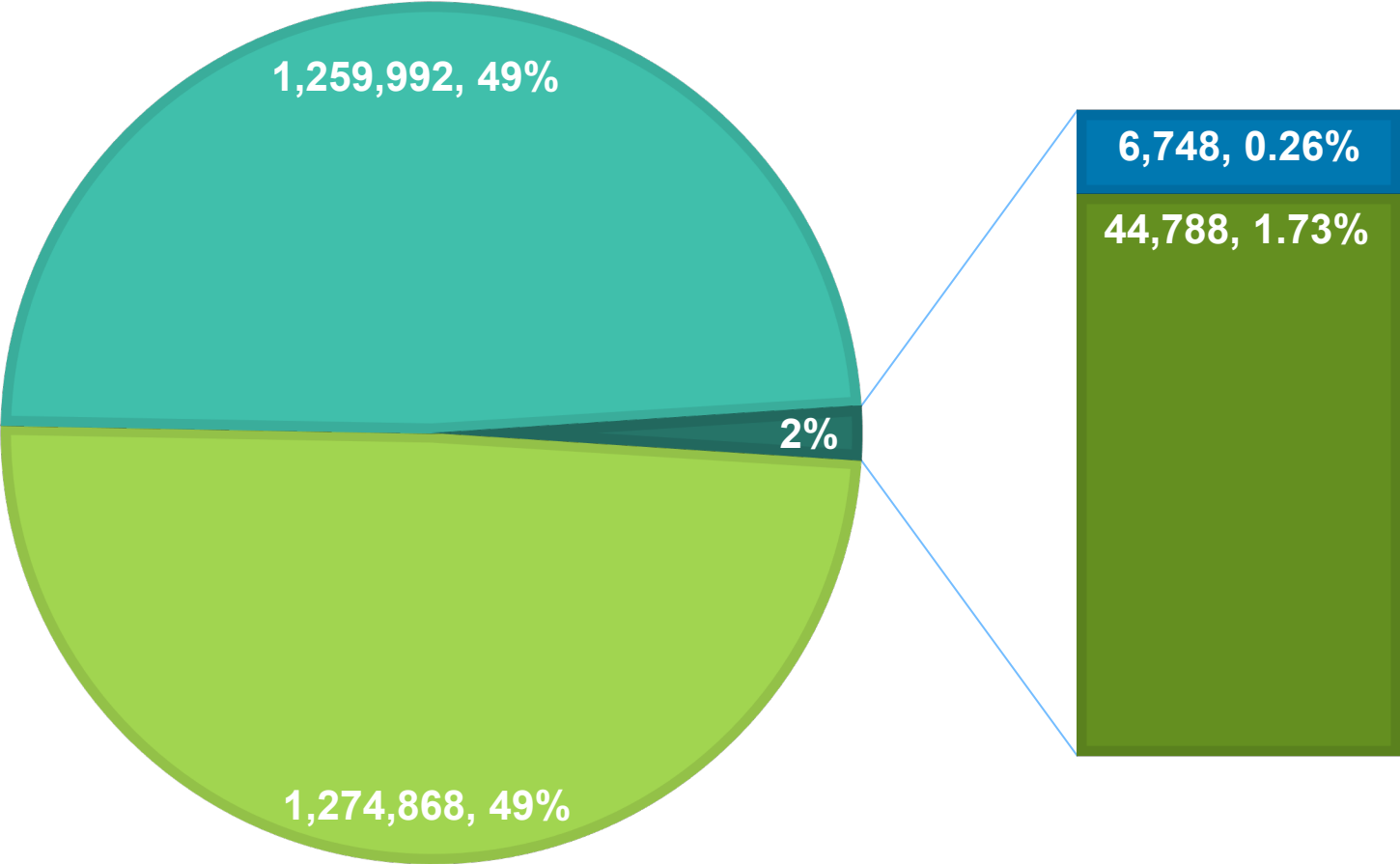
■ No COVID-19 ■ Prior COVID-19 ■ ME/CFS-like illness after COVID-19 ■ ME/CFS-like illness without COVID-19



1 in 59 people have ME/CFS-like illness without COVID-19

1 in 200 people who had COVID-19 have ME/CFS-like illness after COVID-19

■ No COVID-19 ■ Prior COVID-19 ■ ME/CFS-like illness after COVID-19 ■ ME/CFS-like illness without COVID-19



Persons with ME/CFS-like illness after COVID-19 less likely to have orthostatic intolerance and shorter duration of symptoms

	ME/CFS-like illness after COVID-19	ME/CFS-like illness without COVID-19	No ME/CFS-like illness
Characteristic	% (CI)	% (CI)	% (CI)
ME/CFS-like illness diagnostic criteria			
Fatigue	100 (100, 100)	100 (100, 100)	19 (18, 21)
Post-exertional malaise	100 (100, 100)	100 (100, 100)	4.0 (3.3, 4.9)
Unrefreshing sleep	100 (100, 100)	100 (100, 100)	26 (24, 28)
Cognitive impairment	98 (90, 100)	91 (77, 97)	5.5 (4.7, 6.5)
Orthostatic intolerance	3.9 (1.3, 11)	30 (19, 45)	0.9 (0.56, 1.3)
Years since fatigue onset (mean)	2 (1.5, 2.0)	9 (5.7, 11)	

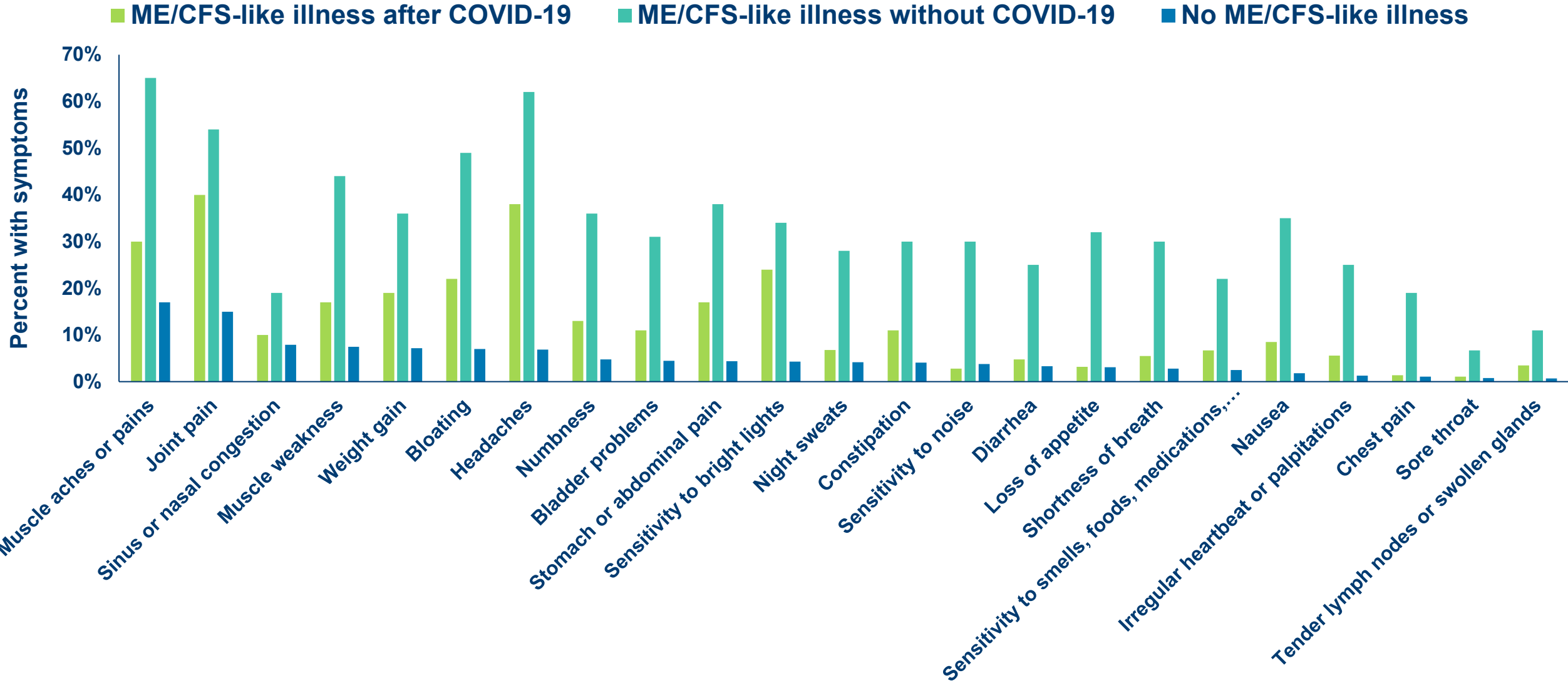
Persons with ME/CFS-like illness after COVID-19 are younger, more likely to be LatinX/Hispanic, and more likely to be obese

	ME/CFS-like illness after COVID-19	ME/CFS-like illness without COVID-19	No ME/CFS-like illness
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Years since fatigue onset (mean)	2 (1.5, 2.0)	9 (5.7, 11)	
Age, years (mean)	36 (33, 39)	45 (41, 50)	50 (49, 50)
Race/ethnicity			
LatinX/Hispanic	45 (15, 78)	29 (17, 43)	17 (16, 19)
Black	3.6 (0.61, 19)	9.2 (2.9, 25)	5.5 (4.6, 6.6)
Asian	0.3 (0.08, 1.3)	13 (6.0, 25)	22 (20, 24)
White	48 (17, 80)	46 (33, 60)	50 (48, 52)
Female sex	63 (25, 90)	78 (63, 88)	58 (56, 60)
Body mass index ≥ 30 kg/m ²	43 (14, 78)	48 (35, 62)	26 (24, 27)

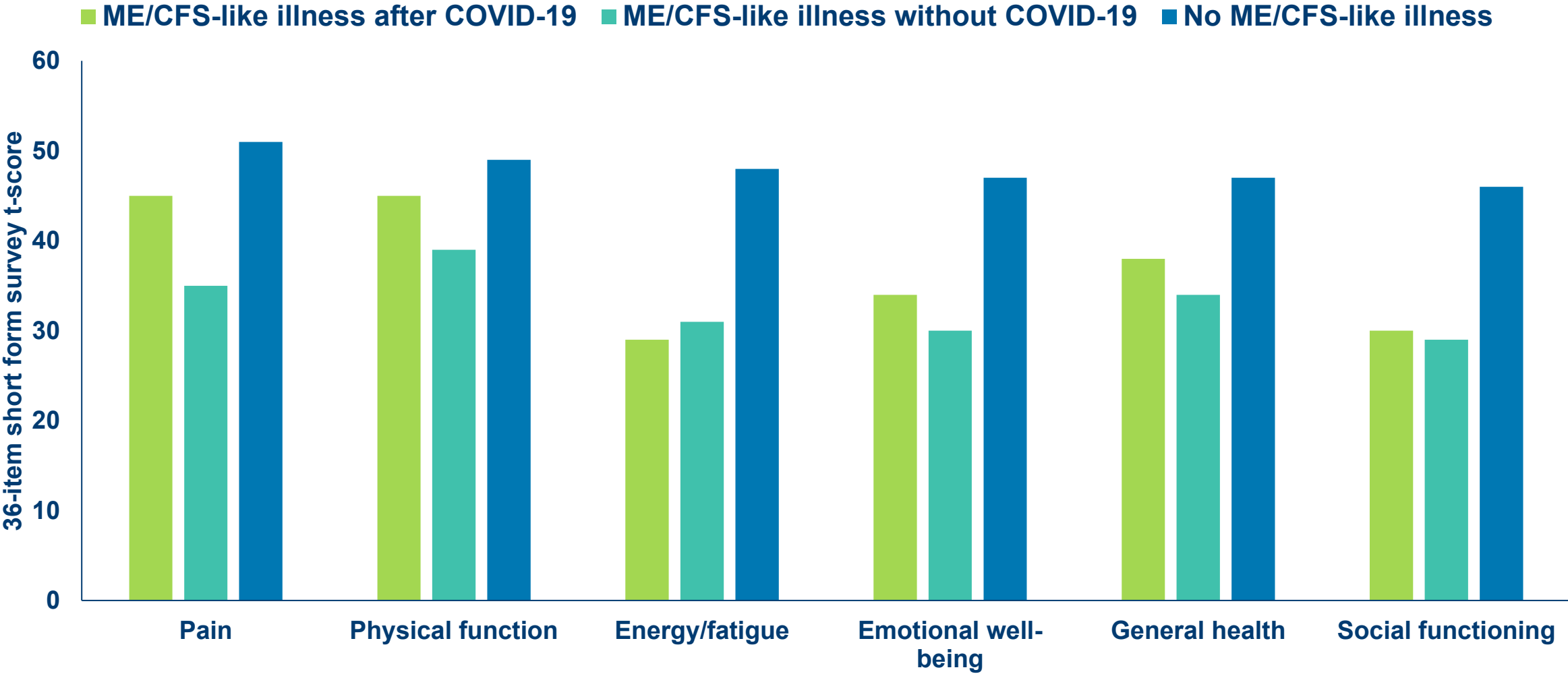
Persons with ME/CFS-like illness after COVID-19 are less likely to be vaccinated and more likely to had infection in pre-Delta period

	ME/CFS-like illness after COVID-19	ME/CFS-like illness without COVID-19	No ME/CFS-like illness
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Female sex	63 (25, 90)	78 (63, 88)	58 (56, 60)
Body mass index \geq 30 kg/m ²	43 (14, 78)	48 (35, 62)	26 (24, 27)
COVID-19 vaccination	75 (37, 94)	92 (83, 97)	95 (94, 95)
Variant at time of first COVID-19 episode			
Pre-Delta	74 (37, 93)	14 (8.2, 22)	15 (13, 16)
Delta	5.2 (1.9, 14)	19 (7.8, 38)	6.3 (5.5, 7.3)
Omicron	3.5 (0.97, 12)	63 (45, 78)	71 (69, 74)
Unknown	17 (2.5, 63)	5.1 (0.95, 23)	7.5 (6.0, 9.3)

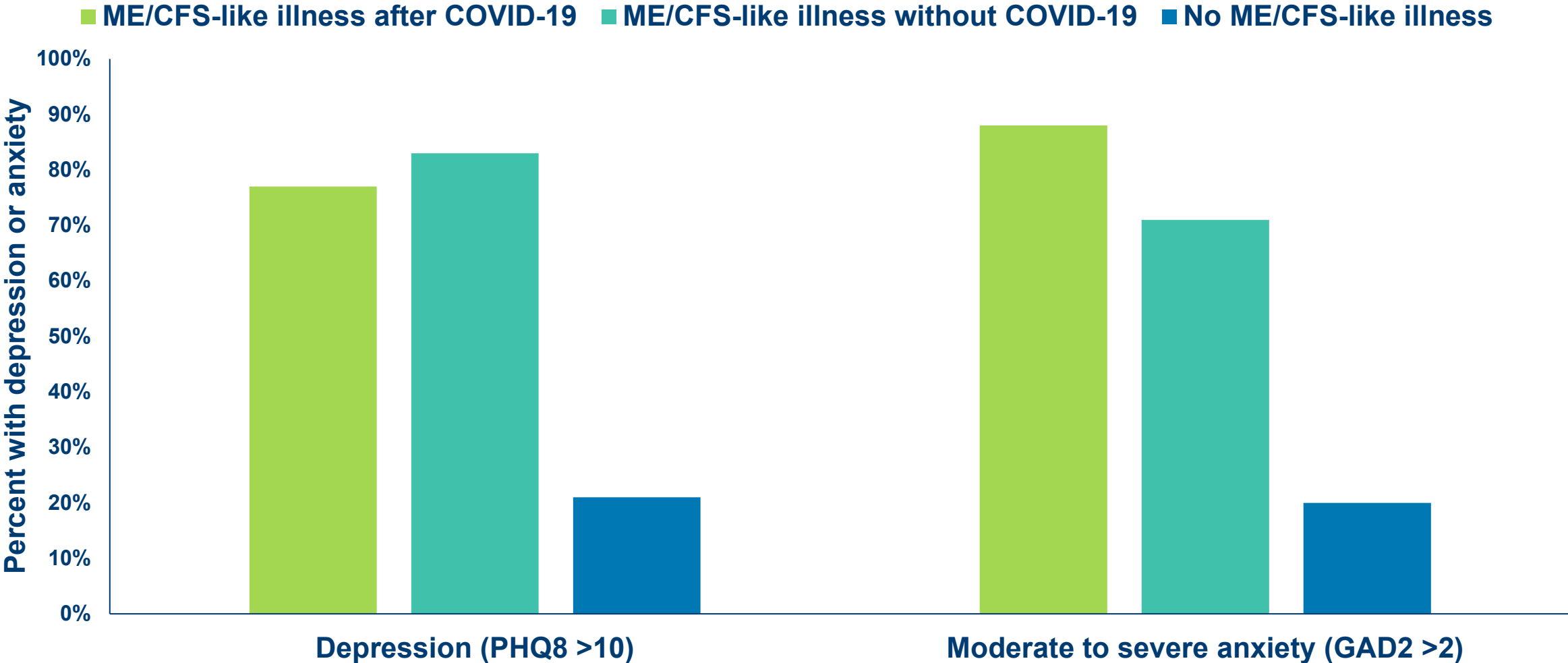
Persons with ME/CFS after and ME/CFS without COVID-19 experience many severe, frequent symptoms



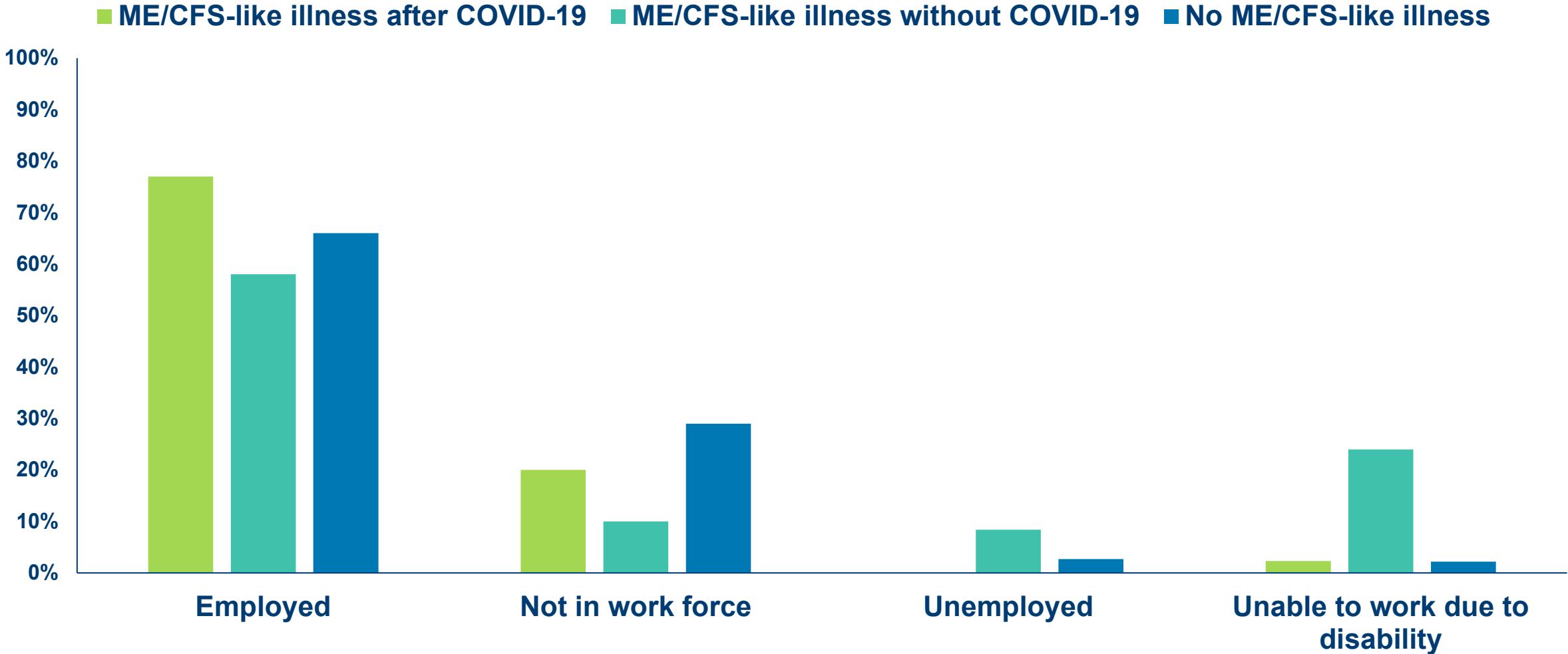
Persons with ME/CFS-like illness after COVID-19 and without COVID-19 have lower physical, emotional, and social functioning



Persons with ME/CFS-like illness after COVID-19 and without COVID-19 more likely to have depression or anxiety



Persons with ME/CFS-like illness without COVID-19 more likely to be unable to work due to disability



Burden of ME/CFS-like illness after COVID-19 might be very large

Our study

2,586,396 adults × 50% had COVID-19 × 1 in 200 with ME/CFS-like illness after COVID-19 =
6,748 (95% confidence interval 1,782-11,713)

United States

258,327,312 adults × 50% had COVID-19 × 1 in 200 with ME/CFS-like illness after COVID-19 =
673,985 (95% confidence interval 177,985-1,169,886)

Persons with ME/CFS-like illness after COVID-19

↑ Symptoms

↓ Physical, emotional, and social functioning

↑ Depression and anxiety

Thank you!!!

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