

Supplemental Online Content

Li Y, Tong CH, Bare LA, Devlin JJ. Assessment of the association of vitamin D level with SARS-CoV-2 seropositivity among working-age adults. *JAMA Netw Open*. 2021;4(5):e2111634. doi:10.1001/jamanetworkopen.2021.11634

eTable 1. Characteristics of the Individuals in the Study According to Vitamin D Levels Before COVID-19 Pandemic (September 2019 to January 2020): <30 vs. \geq 30 ng/mL

eTable 2. Characteristics of the Individuals in the Study According to Vitamin D Levels Before COVID-19 Pandemic (September 2019 to January 2020): <20 vs. \geq 20 ng/mL

eTable 3. Characteristics of the Individuals Included in the Study vs. Those Excluded From the Study Because of No SARS-CoV-2 Serology Testing (August 2020 to November 2020)

eFigure. Distributions of Propensity Scores Before and After Matching

This supplemental material has been provided by the authors to give readers additional information about their work.

eTable 1. Characteristics of the Individuals in the Study According to Vitamin D Levels Before COVID-19 Pandemic (September 2019 to January 2020): <30 vs. ≥30 ng/mL

Characteristic ^a	Total n=18,148	Vitamin D <30 ng/mL ^b n=10,876	Vitamin D ≥30 ng/mL ^b n=7272	P value	Standardized difference
Age					
≥60 y	2926 (16.1)	1269 (11.7)	1657 (22.8)	<.001	.30
<60 y	15,222 (83.9)	9607 (88.3)	5615 (77.2)		
Sex					
Male	5978 (32.9)	3601 (33.1)	2377 (32.7)	.55	.009
Female	12,170 (67.1)	7275 (66.9)	4895 (67.3)		
Race					
Asian	3026 (17.0)	2020 (19.0)	1006 (14.1)	<.001	.46
Black	3035 (17.1)	2192 (20.6)	843 (11.8)		
Hispanic	2439 (13.7)	1748 (16.4)	691 (9.7)		
Other ^c	1482 (8.3)	939 (8.8)	543 (7.6)		
White	7785 (43.8)	3736 (35.1)	4049 (56.8)		
Education					
No college degree	8246 (46.6)	5298 (50.3)	2948 (41.2)	<.001	.18
College degree	9452 (53.4)	5238 (49.7)	4214 (58.8)		
BMI					
≥30 kg/m ²	6861 (37.9)	4700 (43.3)	2161 (29.7)	<.001	.28
<30 kg/m ²	11,265 (62.1)	6162 (56.7)	5103 (70.3)		
Blood pressure					
High	7886 (43.5)	4859 (44.7)	3027 (41.7)	<.001	.06
Elevated	2818 (15.5)	1667 (15.3)	1151 (15.8)		
Normal	7427 (41.0)	4342 (40.0)	3085 (42.5)		
Smoking					
Yes	2238 (12.3)	1486 (13.7)	752 (10.3)	<.001	.10
No	15,895 (87.7)	9379 (86.3)	6516 (89.7)		
Geographical location					
Northeast	3937 (21.8)	2335 (21.6)	1602 (22.2)	<.001	.07
Midwest	2835 (15.7)	1627 (15.1)	1208 (16.7)		
West	4195 (23.3)	2638 (24.4)	1557 (21.5)		
South	7057 (39.2)	4196 (38.9)	2861 (39.6)		
COVID-19 serology					
Positive	900 (5.0)	611 (5.6)	289 (4.0)	<.001	.08
Negative	17,248 (95.0)	10,265 (94.4)	6983 (96.0)		

^aBody mass index, blood pressure, and smoking status were determined during a biometric screening program that took place from September 2019 to January 2020

^bData shown are the counts (percentage)

^cAmerican Indian or Alaska Native, Native Hawaiian or other Pacific Islander, or 2 or more ethnicities

eTable 2. Characteristics of the Individuals in the Study According to Vitamin D Levels Before COVID-19 Pandemic (September 2019 to January 2020): <20 vs. ≥20 ng/mL

Characteristic ^a	Total n=18,148	Vitamin D <20 ng/mL ^b n=4498	Vitamin D ≥20 ng/mL ^b n=13,650	P value	Standardized difference
Age					
≥60 y	2926 (16.1)	378 (8.4)	2548 (18.7)	<.001	.30
<60 y	15,222 (83.9)	4120 (91.6)	11102 (81.3)		
Sex					
Male	5978 (32.9)	1426 (31.7)	4552 (33.3)	.04	.04
Female	12,170 (67.1)	3072 (68.3)	9098 (66.7)		
Race					
Asian	3026 (17.0)	847 (19.2)	2179 (16.3)	<.001	.58
Black	3035 (17.1)	1279 (29.0)	1756 (13.2)		
Hispanic	2439 (13.7)	767 (17.4)	1672 (12.5)		
Other ^c	1482 (8.3)	411 (9.3)	1071 (8.0)		
White	7785 (43.8)	1110 (25.1)	6675 (50.0)		
Education					
No college degree	8246 (46.6)	2368 (54.9)	5878 (43.9)	<.001	.22
College degree	9452 (53.4)	1944 (45.1)	7508 (56.1)		
BMI					
≥30 kg/m ²	6861 (37.9)	2294 (51.1)	4567 (33.5)	<.001	.36
<30 kg/m ²	11,265 (62.1)	2197 (48.9)	9068 (66.5)		
Blood pressure					
High	7886 (43.5)	2170 (48.3)	5716 (41.9)	<.001	.13
Elevated	2818 (15.5)	642 (14.3)	2176 (16.0)		
Normal	7427 (41.0)	1681 (37.4)	5746 (42.1)		
Smoking					
Yes	2238 (12.3)	729 (16.2)	1509 (11.1)	<.001	.15
No	15,895 (87.7)	3765 (83.8)	12,130 (88.9)		
Geographical location					
Northeast	3937 (21.8)	824 (18.4)	3113 (23.0)	<.001	.12
Midwest	2835 (15.7)	690 (15.4)	2145 (15.8)		
West	4195 (23.3)	1087 (24.3)	3108 (22.9)		
South	7057 (39.2)	1874 (41.9)	5183 (38.3)		
COVID-19 serology					
Positive	900 (5.0)	290 (6.4)	610 (4.5)	<.001	.09
Negative	17,248 (95.0)	4208 (93.6)	13,040 (95.5)		

^aBody mass index, blood pressure, and smoking status were determined during a biometric screening program that took place from September 2019 to January 2020

^bData shown are the counts (percentage)

^cAmerican Indian or Alaska Native, Native Hawaiian or other Pacific Islander, or 2 or more ethnicities

eTable 3. Characteristics of the Individuals Included in the Study vs. Those Excluded From the Study Because of No SARS-CoV-2 Serology Testing (August 2020 to November 2020)

Characteristic ^a	Excluded for no SARA-CoV-2 serology testing ^b n=8347	Included in the final analysis ^b n=18,148	P value	Standardized difference
Age				
≥60 y	1491 (17.9)	2926 (16.1)	<.001	.04
<60 y	6854 (82.1)	15,222 (83.9)		
Sex				
Male	2657 (31.8)	5978 (32.9)	.07	.02
Female	5690 (68.2)	12,170 (67.1)		
Race				
Asian	1193 (17.0)	3026 (17.0)	<.001	.10
Black	1440 (20.5)	3035 (17.1)		
Hispanic	865 (12.3)	2439 (13.7)		
Other ^c	631 (9.0)	1482 (8.3)		
White	2897 (41.2)	7785 (43.8)		
Education				
No college degree	4207 (52.8)	8246 (46.6)	<.001	.13
College degree	3755 (47.2)	9452 (53.4)		
BMI				
≥30 kg/m ²	3152 (37.8)	6998 (38.6)	.21	.02
<30 kg/m ²	5185 (62.2)	11,129 (61.4)		
Blood pressure				
High	4062 (48.8)	8677 (47.9)	.35	.02
Elevated	1195 (14.4)	2682 (14.8)		
Normal	3068 (36.9)	6765 (37.3)		
Smoking				
Cotinine detected	872 (10.4)	1773 (9.8)	.09	.02
Cotinine not detected	7475 (89.6)	16,375 (90.2)		
Geographical location				
Northeast	1559 (20.4)	3925 (21.8)	.004	.05
Midwest	1325 (17.3)	2833 (15.7)		
West	1778 (23.3)	4191 (23.3)		
South	2982 (39.0)	7075 (39.3)		
Vitamin D (2020)				
<30 ng/ml	5078 (60.8)	10,595 (58.4)	<.001	.05
≥30 ng/ml	3269 (39.2)	7553 (41.6)		
<20 ng/ml	2260 (27.1)	4424 (24.4)	<.001	.06
≥20 ng/ml	6087 (72.9)	13724 (75.6)		

^aBody mass index, blood pressure, and smoking status were determined during a biometric screening program that took place from August 2020 to November 2020

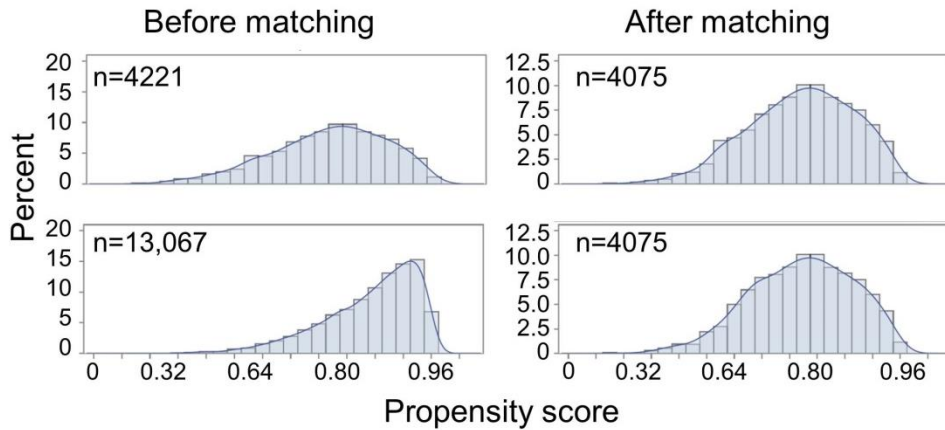
^bData shown are the counts (percentage)

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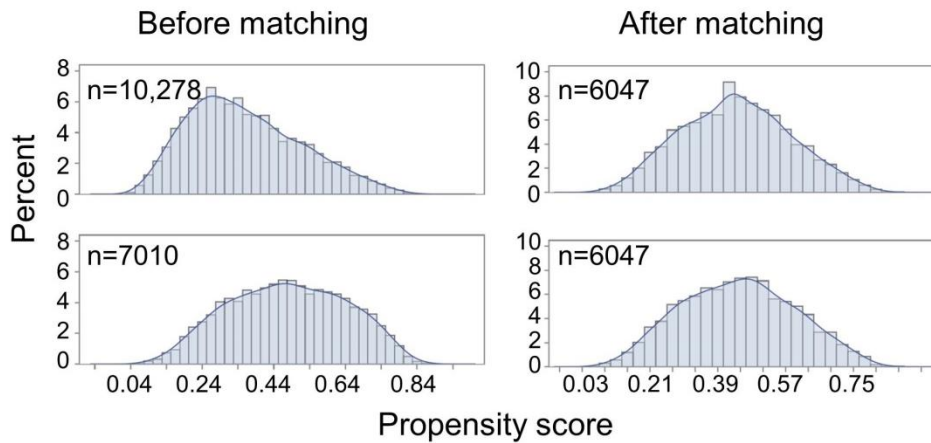
eFigure. Distributions of Propensity Scores Before and After Matching

The C-statistic for the matched propensity score model was 0.73 in panel A, 0.70 in panel B, 0.71 in panel C, and 0.69 in panel D.

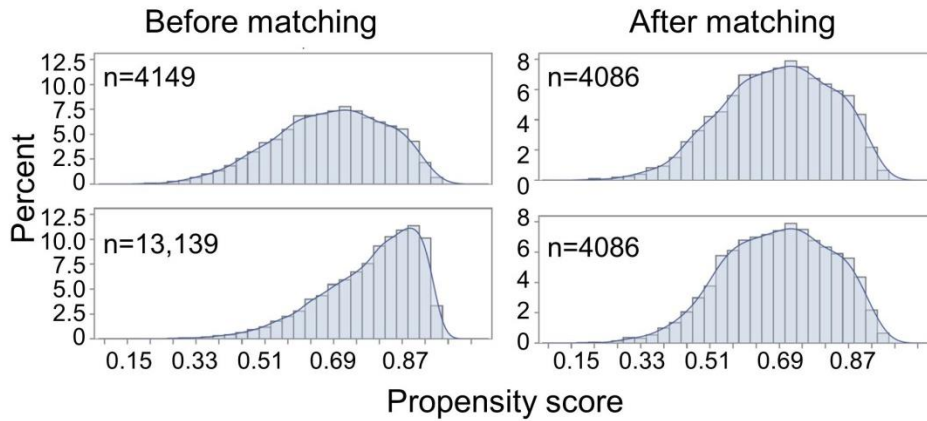
A. Top: 2019 VitD <20 ng/mL; Bottom: 2019 VitD ≥20 ng/ml



B. Top: 2019 VitD <30 ng/mL; Bottom: 2019 VitD ≥30 ng/ml



C. Top: 2020 VitD <20 ng/mL; Bottom: 2020 VitD ≥20 ng/ml



D. Top: 2020 VitD <30 ng/mL; Bottom: 2020 VitD ≥30 ng/ml

