

BACKGROUND

Higher risk of SARS-CoV-2 infection has been associated with multiple factors such as limited English proficiency, high density populations, and residing in a neighborhood with financial insecurity.^{1,2,3}

CO-CREATE, an NIH-funded study, aims to promote equity in COVID-19 testing for underserved communities within the San Ysidro community, a US/Mexico border region, with predominantly Spanish-speaking Latino/a/x residents receiving care at a federally qualified health center.

STUDY OBJECTIVE

To explore the associations between PCR (polymerase chain reaction) positivity and vaccine status, known exposure, and household language spoken, controlling for temporal and sociodemographic factors.

METHODS

Data were extracted from a survey conducted at our walk-up testing site associated with a federally qualified health center in San Ysidro.

Participants self-reported sociodemographic factors, household exposure and size, vaccine status, and symptoms.

Using a two-level mixed effects logistic regression model, we evaluated the effect of vaccine status and household exposure on PCR positivity taking into account symptoms, age, language spoken in the home, and testing date.

CO-CREATE: Community-Driven Optimization of COVID-19 Testing to Reach and Engage underserved Areas for Testing Equity

Table 1: Participant characteristics

	Never Positive	Positive at least once	No-Result	Total P-value
	7,260	1,819	56	9,135
Sex				0.727
Female	4365 (60.1)	1107 (60.9)	37 (66.1)	5509 (60.3)
Male	2829 (39.0)	698 (38.4)	18 (32.1)	3545 (38.8)
Not defined/Missing	66 (0.9)	14 (0.8)	1 (1.8)	81 (0.9)
Age Category				<0.001
<5	312 (4.3)	55 (3.0)	4 (7.1)	371 (4.1)
5-15	1428 (19.7)	235 (12.9)	10 (17.9)	1673 (18.3)
16-24	805 (11.1)	212 (11.7)	3 (5.4)	1020 (11.2)
25-34	1136 (15.7)	288 (15.8)	9 (16.1)	1433 (15.7)
35-44	889 (12.3)	257 (14.1)	11 (19.6)	1157 (12.7)
45-54	959 (13.2)	257 (14.1)	10 (17.9)	1226 (13.4)
>55	1731 (23.8)	515 (28.3)	9 (16.1)	2255 (24.7)
Language				<0.001
English	1007 (13.9)	163 (9.0)	12 (21.4)	1182 (12.9)
Spanish	4206 (57.9)	973 (53.5)	29 (51.8)	5208 (57.0)
Other/Missing	2047 (28.2)	683 (37.6)	15 (26.8)	2745 (30.1)
Education				<0.001
Less than high school	1606 (22.1)	326 (17.9)	11 (19.6)	1943 (21.3)
High school/GED/Vocation	1830 (25.2)	449 (24.7)	9 (16.1)	2288 (25.1)
University degree/Adv	510 (7.0)	120 (6.6)	5 (8.9)	635 (7.0)
Don't know/No response	3314 (45.7)	924 (50.8)	31 (55.4)	4269 (46.7)
Returned for testing	1951 (26.9)	783 (43.0)	3 (5.4)	2737 (30.0)

Table 2: Encounter details

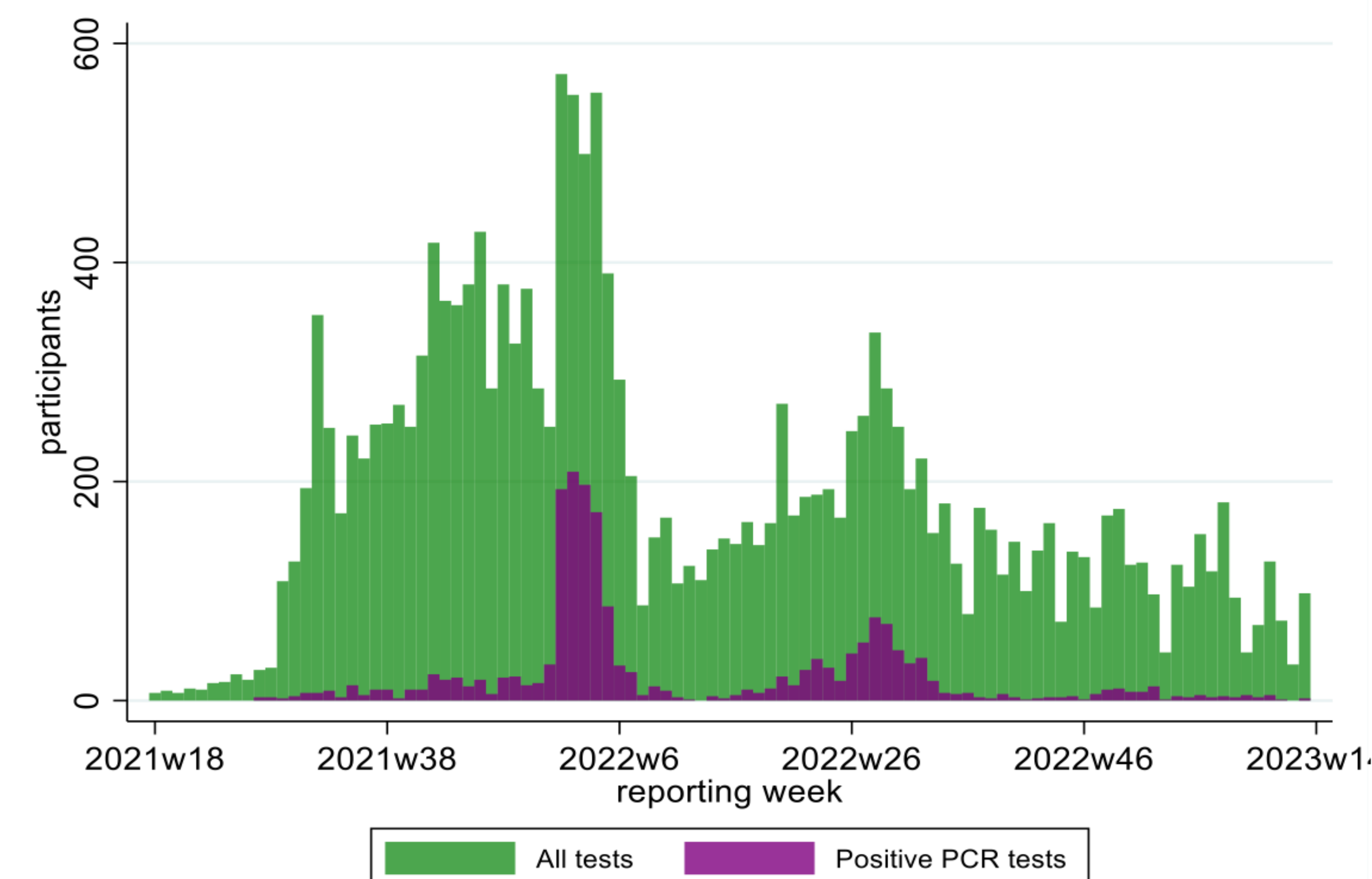
	Non-Omicron wave	Omicron wave	Total P-value
	15,699	2,794	18,493
Test result			<0.001
Positive (versus other)	1024 (6.5)	821 (29.4)	1845 (10.0)
Initial visit			<0.001
(Versus repeat)	7428 (47.3)	1707 (61.1)	9135 (49.4)
Household exposure			<0.001
Yes	972 (6.2)	380 (13.6)	1352 (7.3)
No	9543 (60.8)	759 (27.2)	10302 (55.7)
Missing/Unknown	5184 (33.0)	1655 (59.2)	6839 (37.0)
Vaccine status			<0.001
Yes	10719 (68.3)	2250 (80.5)	12969 (70.1)
No	2966 (18.9)	493 (17.6)	3459 (18.7)
Missing/Unknown	2014 (12.8)	51 (1.8)	2065 (11.2)
Any Symptoms Reported			<0.001
Yes	4849 (30.9)	640 (22.9)	5489 (29.7)
No	6373 (40.6)	546 (19.5)	6919 (37.4)
Missing/Unknown	4477 (28.5)	1608 (57.6)	6085 (32.9)

Table 3: Odds of a positive COVID-19 PCR result by Omicron wave

Predictors	Global Odds Ratios (95%CI)	Non-Omicron wave	Omicron wave
Vaccinated, not exposed (ref)	1.00		
Vaccinated, exposed	2.90 (2.39, 3.52)*	3.77 (2.98, 4.78)*	1.54 (1.12, 2.13)
Unvaccinated, not exposed	1.05 (0.81, 1.35)	1.24 (0.94, 1.65)	0.72 (0.39, 1.30)
Unvaccinated, exposed	5.27 (3.73, 7.46)*	8.59 (5.77, 12.79)*	1.76 (0.95, 3.28)*
Any symptoms (ref: no versus yes)	5.50 (4.57, 6.62)*	5.90 (4.71, 7.40)*	4.92 (3.54, 6.84)*
Sex (ref: female versus other)	1.09 (0.92, 1.27)	1.00 (1.00, 1.00)*	1.24 (0.92, 1.68)
Date of test	1.00 (1.00, 1.00)*	1.01 (1.00, 1.01)*	0.97 (0.96, 0.99)*
Age	1.00 (1.00, 1.01)	0.00 (0.00, 0.00)*	0.99 (0.99, 1.00)

*significant at <0.05

Figure 1: PCR Positivity among study participants (May 2021 – March 2023) n = 9135



RESULTS

Between May 1, 2021 and March 31, 2023, 18,493 COVID-19 PCR tests from 9,135 CO-CREATE participants were evaluated.

Participant details:

- 20% were positive at least once during the study period
- 60% were female
- 62% were younger than 35 years
- 69% reported having received at least one COVID-19 vaccine

PCR details:

- 10% of all PCR tests were positive for COVID-19
- 29% of PCR tests administered during the Omicron wave were positive for COVID-19

CONCLUSION

Being unvaccinated, having a household exposure to COVID-19, and having symptoms were significantly associated with PCR positivity after controlling for test date, age, and language spoken at home.

Providing equitable access to COVID-19 vaccination is important for reducing risk of transmission within households.

Additional research is needed to better understand pathways of transmission in vulnerable populations.