

HEALTH BEHAVIORS ASSOCIATED WITH ACUTE RESPIRATORY ILLNESS BEFORE AND DURING THE SARS-COV-2 PANDEMIC – KING COUNTY, WASHINGTON

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BACKGROUND

- Non-pharmaceutical interventions (NPIs), such as masking and social distancing, can reduce SARS-CoV-2 transmission.
- Longitudinal health behavioral data in individuals with acute respiratory illness (ARI) during the COVID-19 pandemic are limited.
- We describe changes in adherence to NPIs and the impact of ARIs on work or school in families during 3 time periods before and during the COVID-19 pandemic.

METHODS

- From November 14, 2019 to June 19, 2021, households with school-aged children in King County, Washington, USA, were remotely monitored weekly for symptoms of acute respiratory illness (ARI) in a longitudinal cohort study.
- Eligible households had ≥3 individuals sleeping in the home ≥4 days per week with 1 child (aged 3 months - 17 years).
- ARI was defined as cough or ≥2 qualifying symptoms:
 - All participants: fever, sore throat, runny nose, muscle or body aches, headache, difficulty breathing, fatigue, nausea or vomiting
 - Additionally, for participants < 18 years of age: ear pain or drainage, rash, and diarrhea
- At 7 days after initial report, participants with ARI were asked about illness-related behavior changes (e.g. masking, isolation, hand hygiene) and illness impacts on school and work.
- Using generalized estimating equations for household clusters, we compared the frequency of behavior changes and school and work impact over 3 time periods (Figure 1).

RESULTS

- Of 1861 participants from 470 households enrolled in the study:
 - 698 (38%) participants from 328 (70%) households reported 1157 acute respiratory illnesses (ARIs).
- The percentage of ill participants who reported masking, staying home, and avoiding contact with others rose over time.
 - Masking increased from the pre-pandemic period.
- The percentage of ill participants with school impacted was lower in the pre-vaccine pandemic (Period 2) but similar pre-pandemic (Period 1) and post-vaccine approval (Period 3).
- The percentage of ill participants who worked from home and missed work decreased over time.

Table 1. Demographic Data for Participants

Reporting ARI	Period 1	Period 2	Period 3
	N=350	N=186	N=162
UNIQUE INDIVIDUALS			
Demographic Characteristics			
Age (years)			
Median [Range]	28.0 [0, 84.0]	36.5 [0, 75.0]	29.5 [0, 56.0]
<5	38 (10.9%)	22 (11.8%)	23 (14.2%)
5-12	116 (33.1%)	35 (18.8%)	42 (25.9%)
13-17	18 (5.1%)	8 (4.3%)	13 (8.0%)
≥18	178 (50.1%)	121 (65.1%)	84 (51.9%)
Sex			
Female	188 (53.7%)	121 (65.1%)	82 (50.6%)
Race/Ethnicity			
White	273 (78.0%)	140 (75.3%)	40 (24.7%)
Asian	26 (7.4%)	12 (6.5%)	1 (0.6%)
Black	4 (1.1%)	1 (0.5%)	2 (1.2%)
Other	41 (11.7%)	19 (10.2%)	9 (5.6%)
Hispanic	20 (5.7%)	17 (9.1%)	10 (6.2%)
Highest Education Level			
	N=178	N=121	N=84
High school graduate, GED, or less	3 (1.7%)	3 (2.5%)	2 (2.4%)
Some college	15 (8.4%)	13 (10.7%)	8 (9.5%)
Bachelor's degree	77 (43.3%)	43 (35.5%)	34 (40.5%)
Advanced degree	83 (46.6%)	62 (51.2%)	40 (47.6%)
UNIQUE HOUSEHOLDS			
	N=148	N=90	N=90
Size, median [range]			
Children in Household	4.0 [3.0, 7.0]	4.0 [3.0, 7.0]	4.0 [3.0, 7.0]
Age <5 years	65 (43.9%)	42 (46.7%)	39 (43.3%)
Age 5-12 years	97 (65.5%)	56 (62.2%)	63 (70.0%)
Age 13-18 years	33 (22.3%)	23 (25.6%)	21 (23.3%)
Attends daycare	39 (26.4%)	31 (34.4%)	26 (28.9%)
Annual Household Income (USD)			
<\$75,000	6 (4.1%)	6 (6.7%)	3 (3.3%)
\$75,000 - \$150,000	49 (33.1%)	13 (14.4%)	27 (30.0%)
>\$150,000	77 (52.0%)	65 (72.2%)	52 (57.8%)

Figure 1. Study Periods and Number of ARIs by Period

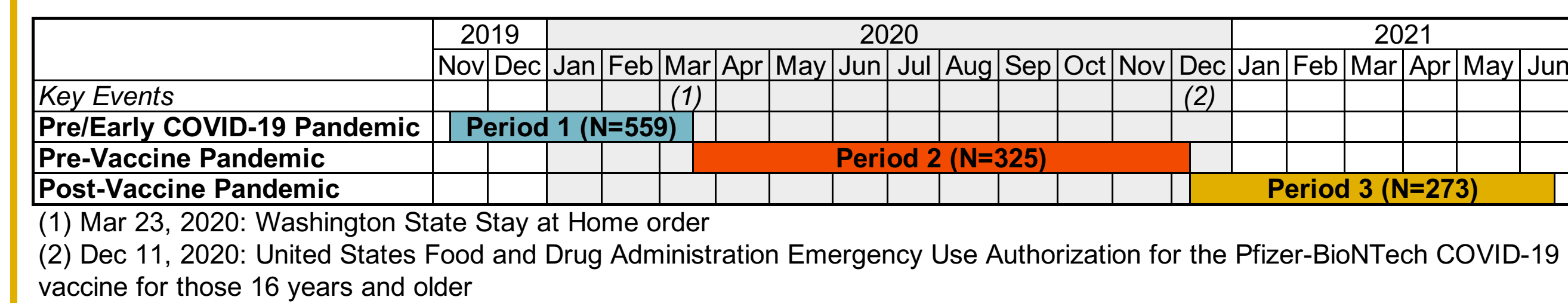


Figure 2. Changes in Behaviors in Response to ARI and ARI Impact on School or Work

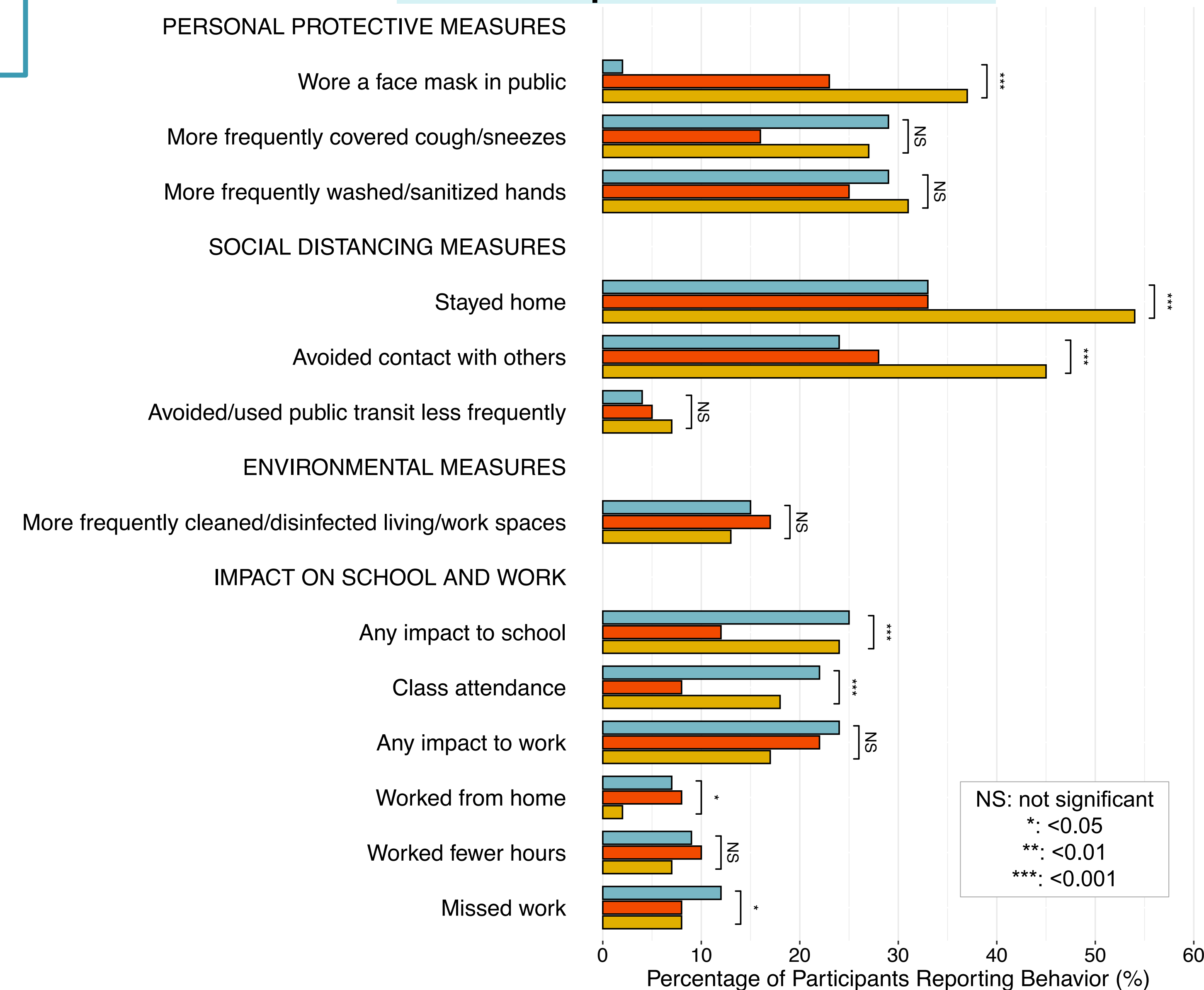


Table 2. ARI Impact on Days of Missed School or Work

Days Missed, mean (range)	Period 1	Period 2	Period 3	P-value
	N = 559	N = 325	N = 273	
School	2.3 (0,7)	3.2 (1,23)	2.3 (1,10)	0.49
Work	2.5 (1,10)	2.2 (1,5)	1.4 (1,3)	< 0.001***

CONCLUSIONS

As the COVID-19 pandemic progressed, households with school-aged children engaged in **isolation, social distancing, and masking** more frequently in response to acute respiratory illness.

The participant-reported impact of acute respiratory illness on work decreased during the pandemic. The societal shift to remote work may have been a factor.

LIMITATIONS & FUTURE DIRECTIONS

- We sought to capture major changes in the COVID-19 pandemic with our 3 time periods but this categorization was not inclusive of all external factors.
- Cohort studies in more diverse populations are needed for generalizability.
- Analysis is in progress to examine the relationship between other predictors (e.g., symptoms, COVID-19 testing results) and behavior change or school and work impact.

ACKNOWLEDGEMENTS

We thank the participating households. Funding: Gates Ventures, the CDC [Contract : 75D30120C09190], and the NIH (grant T32HD007233 to EC).

