**Supplemental**

**Title**: Association Between Social Activities and Risk of COVID-19 in a Cohort of Healthcare Personnel

Table of Contents

[Figures 2](#_Toc170334856)

[Figure S1. Overall distribution of social activity composite and pre-pandemic social similarity. 2](#_Toc170334857)

[Figure S2. Temporal trends of individual social activities among roles. 3](#_Toc170334858)

[Figure S3. Covariate balance 4](#_Toc170334859)

[Figure S4. Group-specific effects of recent social activity composite on SARS-CoV-2 infection 5](#_Toc170334860)

[Figure S5. Group-specific effects of pre-pandemic social similarity on SARS-CoV-2 infection 6](#_Toc170334861)

[Tables 7](#_Toc170334862)

[Table S1.  Estimated coefficients table of full regression models on SARS-CoV-2 infection 7](#_Toc170334863)

[Table S2. Principal component analysis (PCA) loadings for social activities 9](#_Toc170334864)

[Survey Instrument 10](#_Toc170334865)

[Baseline Survey 10](#_Toc170334866)

[Monthly Survey 16](#_Toc170334867)

# Figures

## Figure S1. Overall distribution of social activity composite and pre-pandemic social similarity.

A graph with red and white squares

Description automatically generated

Figure S1. Overall distribution of social activity composite and pre-pandemic social similarity. There was a moderate positive correlation between the two exposures, with Pearson’s r = 0.47.

## Figure S2. Temporal trends of individual social activities among roles.

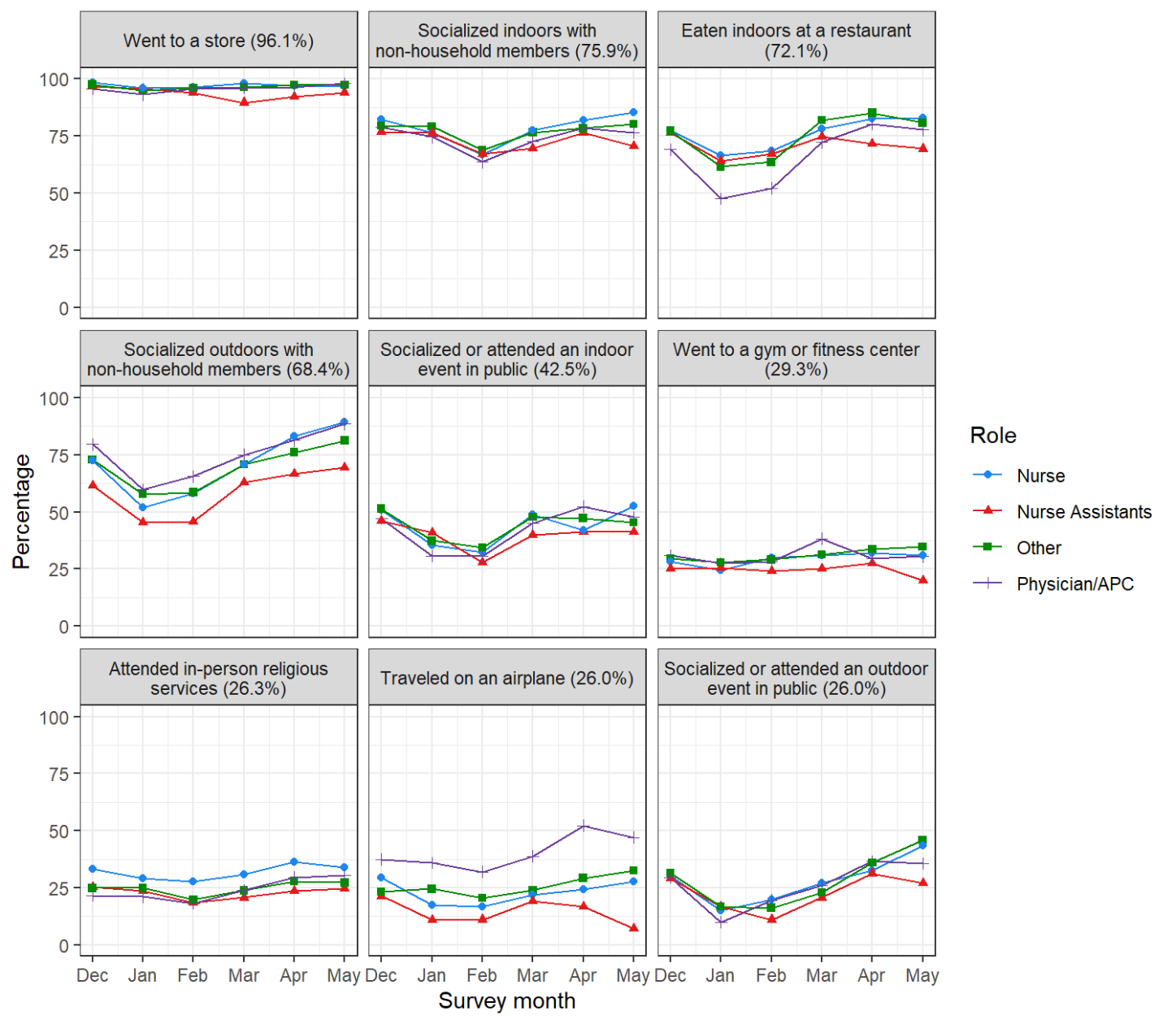


Figure S2. Temporal trends of individual social activities among roles. Social activities were ordered by the overall rate.

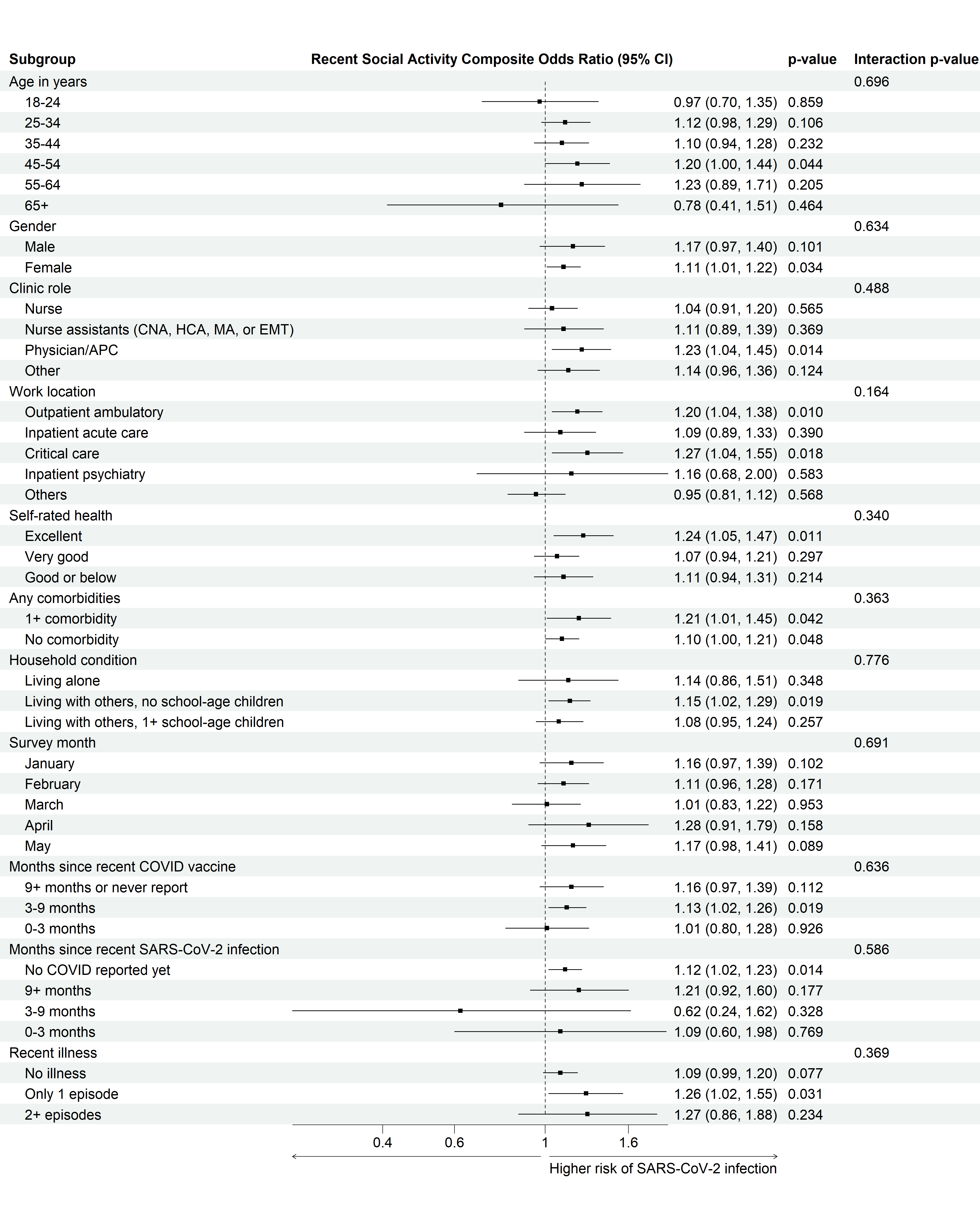
## Figure S3. Covariate balance

A chart of a covariate scale

Description automatically generated with medium confidence

Figure S3. Covariate balance is adjusted by the inverse probability of censoring weight using the covariate balancing propensity score method. The dashed lines at -0.1 and 0.1 serve as the threshold, indicating an acceptable level of covariate balance.

## Figure S4. Group-specific effects of recent social activity composite on SARS-CoV-2 infection



## Figure S5. Group-specific effects of pre-pandemic social similarity on SARS-CoV-2 infection

A screenshot of a computer

Description automatically generated

# Tables

## Table S1.  Estimated coefficients table of full regression models on SARS-CoV-2 infection

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Exposure | | | | | |
|  | Recent social activity composite | | | Pre-pandemic social similarity | | |
| Characteristics | OR | 95% CI | p-value | OR | 95% CI | p-value |
| Recent social activity composite | 1.12 | 1.03, 1.22 | 0.009 | — | — |  |
| Pre-pandemic social similarity | — | — |  | 1.14 | 1.07, 1.22 | <0.001 |
| Age in years |  |  |  |  |  |  |
| 18-24 | — | — |  | — | — |  |
| 25-34 | 2.21 | 1.08, 4.53 | 0.030 | 2.13 | 1.04, 4.38 | 0.039 |
| 35-44 | 1.27 | 0.58, 2.77 | 0.6 | 1.21 | 0.56, 2.65 | 0.6 |
| 45-54 | 1.24 | 0.56, 2.74 | 0.6 | 1.20 | 0.54, 2.64 | 0.7 |
| 55-64 | 0.72 | 0.28, 1.89 | 0.5 | 0.66 | 0.25, 1.71 | 0.4 |
| 65+ | 0.71 | 0.18, 2.83 | 0.6 | 0.65 | 0.16, 2.57 | 0.5 |
| Gender |  |  |  |  |  |  |
| Male | — | — |  | — | — |  |
| Female | 0.97 | 0.66, 1.42 | 0.9 | 0.96 | 0.66, 1.41 | 0.8 |
|  |  |  |  |  |  |  |
| Nurse | — | — |  | — | — |  |
| Nurse assistants (CNA, HCA, MA, or EMT) | 0.83 | 0.49, 1.40 | 0.5 | 0.77 | 0.46, 1.30 | 0.3 |
| Physician/APC | 1.49 | 0.97, 2.31 | 0.070 | 1.52 | 0.99, 2.35 | 0.058 |
| Other | 0.79 | 0.53, 1.19 | 0.3 | 0.80 | 0.53, 1.21 | 0.3 |
| Work location |  |  |  |  |  |  |
| Outpatient ambulatory | — | — |  | — | — |  |
| Inpatient acute care | 1.16 | 0.74, 1.81 | 0.5 | 1.16 | 0.74, 1.82 | 0.5 |
| Critical care | 0.99 | 0.63, 1.57 | >0.9 | 0.98 | 0.62, 1.55 | >0.9 |
| Inpatient psychiatry | 0.66 | 0.25, 1.74 | 0.4 | 0.67 | 0.25, 1.75 | 0.4 |
| Others | 0.91 | 0.60, 1.37 | 0.6 | 0.86 | 0.57, 1.30 | 0.5 |
| Self-rated health |  |  |  |  |  |  |
| Excellent | — | — |  | — | — |  |
| Very good | 1.38 | 0.93, 2.04 | 0.11 | 1.35 | 0.91, 1.99 | 0.14 |
| Good or below | 1.54 | 0.96, 2.48 | 0.072 | 1.56 | 0.98, 2.50 | 0.063 |
| Any comorbidities | 1.15 | 0.78, 1.70 | 0.5 | 1.12 | 0.76, 1.66 | 0.6 |
| Household condition |  |  |  |  |  |  |
| Living alone | — | — |  | — | — |  |
| Living with others, no school-age children | 1.08 | 0.61, 1.89 | 0.8 | 1.07 | 0.61, 1.88 | 0.8 |
| Living with others, 1+ school-age children | 1.53 | 0.85, 2.77 | 0.2 | 1.48 | 0.82, 2.68 | 0.2 |
| Calendar month of taking survey |  |  |  |  |  |  |
| January | — | — |  | — | — |  |
| February | 1.52 | 0.96, 2.41 | 0.076 | 1.54 | 0.97, 2.43 | 0.068 |
| March | 0.51 | 0.29, 0.89 | 0.018 | 0.47 | 0.27, 0.83 | 0.009 |
| April | 0.12 | 0.06, 0.27 | <0.001 | 0.11 | 0.05, 0.25 | <0.001 |
| May | 0.48 | 0.27, 0.85 | 0.011 | 0.39 | 0.22, 0.70 | 0.002 |
| Months since last survey |  |  |  |  |  |  |
| 1 | — | — |  | — | — |  |
| 2 | 1.54 | 0.98, 2.43 | 0.063 | 1.59 | 1.01, 2.51 | 0.046 |
| 3+ | 4.20 | 2.48, 7.09 | <0.001 | 4.58 | 2.70, 7.74 | <0.001 |
| Months since recent COVID vaccine |  |  |  |  |  |  |
| 9+ months or never report | — | — |  | — | — |  |
| 3-9 months | 1.04 | 0.69, 1.56 | 0.9 | 1.13 | 0.75, 1.71 | 0.6 |
| 0-3 months | 0.82 | 0.45, 1.49 | 0.5 | 0.86 | 0.47, 1.57 | 0.6 |
| Months since recent SARS-CoV-2 infection |  |  |  |  |  |  |
| No COVID reported yet | — | — |  | — | — |  |
| 9+ months | 0.64 | 0.37, 1.10 | 0.10 | 0.60 | 0.35, 1.03 | 0.066 |
| 3-9 months | 0.07 | 0.01, 0.36 | 0.002 | 0.07 | 0.01, 0.36 | 0.001 |
| 0-3 months | 0.31 | 0.10, 0.97 | 0.045 | 0.29 | 0.09, 0.92 | 0.036 |
| Recent illness |  |  |  |  |  |  |
| No illness | — | — |  | — | — |  |
| Only 1 episode | 1.22 | 0.79, 1.89 | 0.4 | 1.26 | 0.81, 1.95 | 0.3 |
| 2+ episodes | 1.20 | 0.56, 2.56 | 0.6 | 1.30 | 0.61, 2.77 | 0.5 |

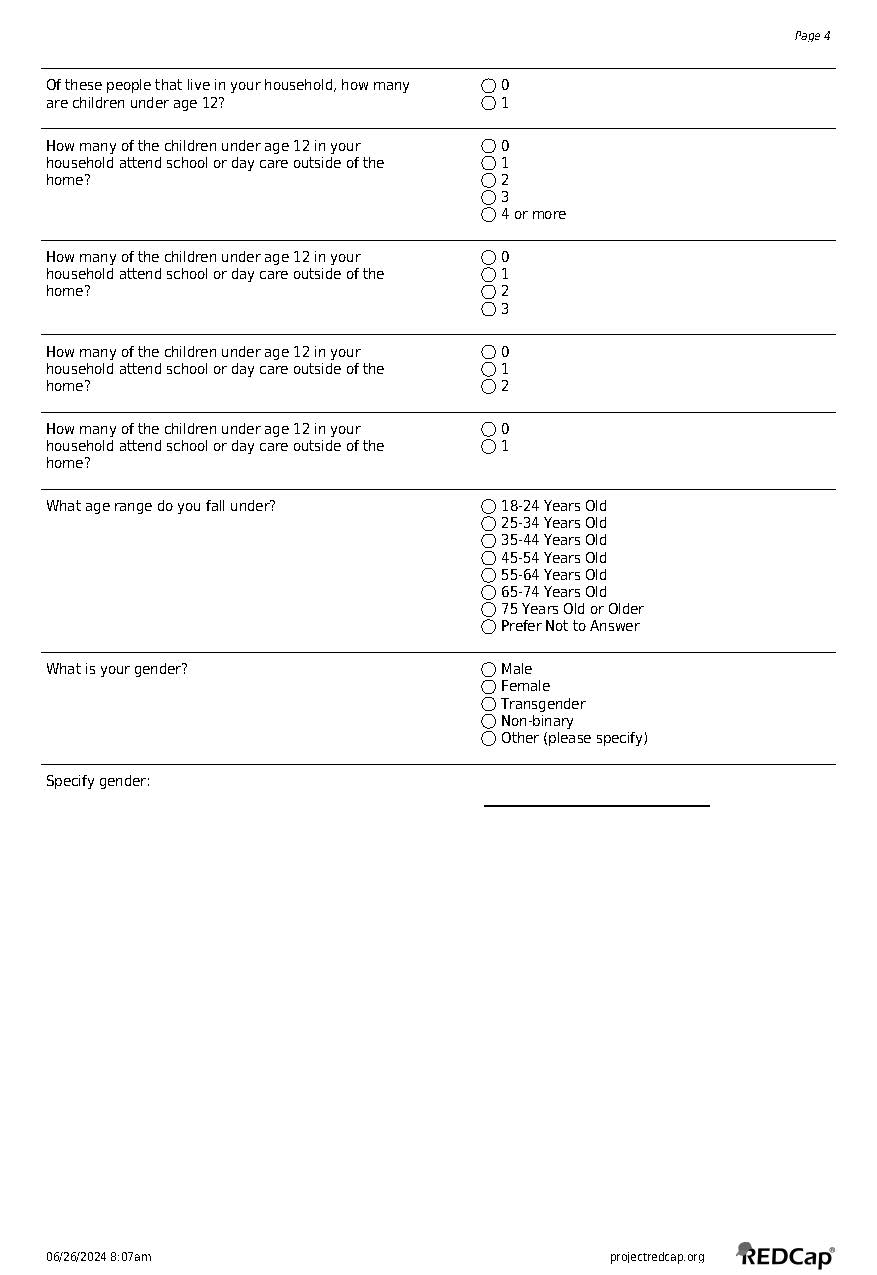
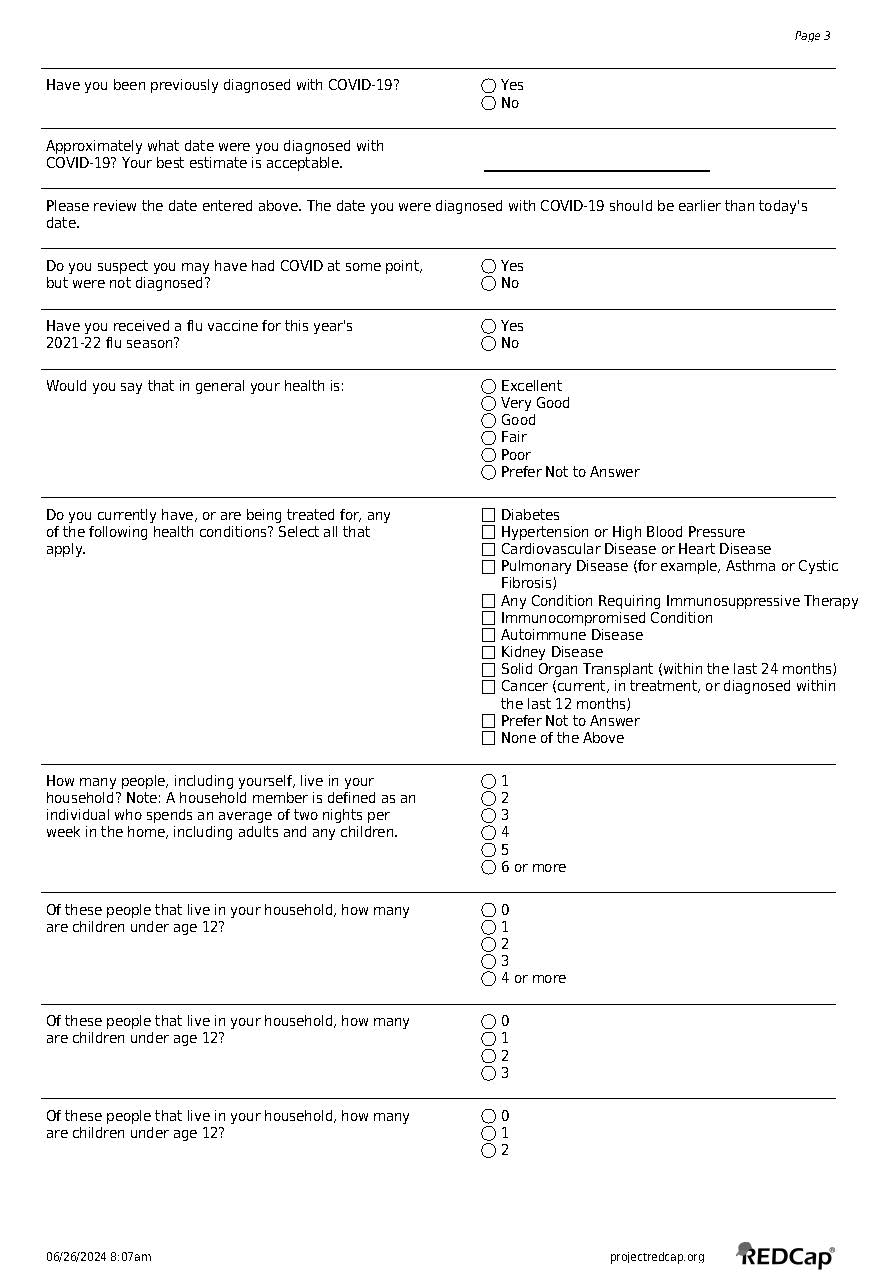
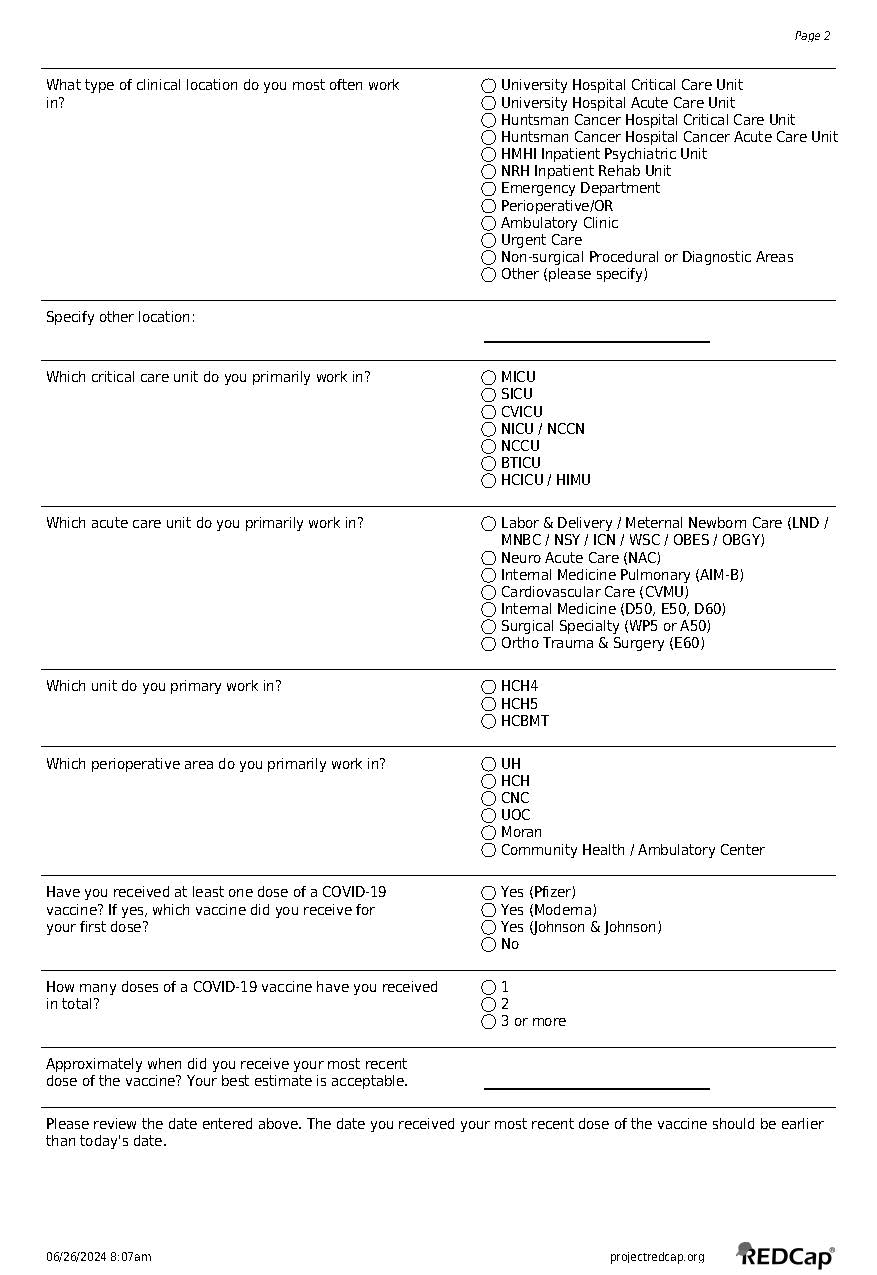
## Table S2. Principal component analysis (PCA) loadings for social activities

|  |  |  |  |
| --- | --- | --- | --- |
|  | PC1 | PC2 | PC3 |
| Socialized at a home indoors with non-household members | -0.2867 | 0.1919 | 0.5880 |
| Socialized outdoors with non-household members | -0.3881 | 0.4503 | 0.0474 |
| Socialized or attended an indoor event in public (i.e., concert/movies/sporting) | -0.4321 | -0.4497 | -0.1262 |
| Socialized or attended an outdoor event in public (i.e., concert/movies/sporting) | -0.4129 | 0.1017 | -0.3108 |
| Attended in-person religious services | -0.2079 | -0.6022 | 0.0201 |
| Went to a store (i.e., grocery, retail, etc.) | -0.2067 | -0.0654 | 0.0547 |
| Went to a gym or fitness center | -0.2735 | 0.0785 | 0.5277 |
| Ate indoors at a restaurant | -0.4323 | -0.1363 | -0.0909 |
| Traveled on an airplane | -0.2497 | 0.3954 | -0.4993 |

PC: principal component

# Survey Instrument

## Baseline Survey

****

## Monthly Survey

