

Supplemental Table 1: Description of study variables and coding used for regression analyses

| Variable | Survey(s) source | Original survey coding | Description of coding for seroconversion regression analyses |
|------------------------------|---|--|--|
| Age | • Enrollment | • Continuous | • Dichotomized to <40 years or ≥40 years |
| Gender | • Enrollment | • Male • Female | • Male • Female |
| Race | • Enrollment | • American Indian or Alaska Native • Asian • Black or African American • Native Hawaiian/other Pacific Islander • White • Other race • Prefer not to answer | • Categorized as: Asian, Black, White, and Other/prefer no answer. Due to small numbers, American Indian or Alaska Native, Native Hawaiian/other Pacific Islander and Other race were combined • We excluded participants who preferred not to answer |
| Hispanic or Latinx ethnicity | • Enrollment | • Hispanic/Latino • Non-Hispanic/Latino • Prefer not to answer | • Categorized as Hispanic/Latino or not Hispanic/Latino • We excluded participants who preferred not to answer |
| Immunocompromised | • Enrollment | • Check boxes to indicate yes for the following conditions: autoimmune or rheumatologic disease, active cancer, hematopoietic stem cell transplant recipient, other immunosuppressing condition, or taking immunosuppressive medications | • Categorized as Yes if they reported any of the following conditions: autoimmune or rheumatologic disease, active cancer, hematopoietic stem cell transplant recipient, other immunosuppressing condition, or taking immunosuppressive medications |
| Occupation | • Enrollment; participants had the opportunity during each survey to report any changes in occupation | • Environmental services worker • Inpatient registered nurse (nursing) • Physician • Advanced practice provider (APP) | • Categorized as administrator, nursing, physician/APP, and other HCP (including environmental service worker, respiratory therapist, radiology technician, and other) • The most commonly reported occupation for the 6 surveys was used |

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| | | <ul style="list-style-type: none"> • Respiratory therapist • Radiology technician • Healthcare administration (administrator) or other non-patient care role • Other (specify) | <ul style="list-style-type: none"> • If no occupation was most common, the most recently reported was used |
| Primary hospital of work | <ul style="list-style-type: none"> • Enrollment; participants had the opportunity during each survey to report any changes in hospital | <ul style="list-style-type: none"> • Emory University Hospital • Emory University Hospital Midtown • Emory St. Joseph's Hospital • Grady Memorial Hospital | <ul style="list-style-type: none"> • Categorized as referral, academic-community, community, safety-net hospitals • The most commonly reported hospital for the 6 surveys was used • If no hospital was most common, the most recently reported was used |
| Primary work setting ^b | <ul style="list-style-type: none"> • Monthly | <ul style="list-style-type: none"> • Hospital inpatient floors (non-ICU) • Emergency room/department • Intensive Care Unit (ICU) • Other | <ul style="list-style-type: none"> • Manually categorized by study investigators into the following locations: inpatient medical/surgical floor, emergency department, ICU, outpatient/other and no patient care • The most commonly reported work setting for the 6 surveys was used • If no work setting was most common, the most recently reported was used • If missing for surveys 1-6, the response at enrollment was used • If participants reported providing no patient care or working no shifts in the prior 2 weeks for a given survey, they were assigned a separate value (no patient care) for that survey |
| Proportion of shifts in COVID-19 units ^p | <ul style="list-style-type: none"> • Monthly | <ul style="list-style-type: none"> • None or nearly none of the time • Some, but less than half of the time • Approximately half of the time • More than half, but not all of the time • Nearly all or all of the time | <ul style="list-style-type: none"> • Dichotomized as none/nearly none versus at least some (included some, half, more than half, and nearly all/all) • The most commonly reported dichotomized proportion of shifts worked in COVID units was used • If no proportion of shifts in COVID units was most common, the most recently reported answer was used • If participants reported providing no patient care or working no shifts in the prior 2 weeks for a given survey, |

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| | | | they were assigned the lowest exposure category (None/nearly none) for that survey |
| Average proportion of shift spent directly at bedside ^c | <ul style="list-style-type: none"> • Monthly and asked as a separate, summary question for the 6-month survey | <ul style="list-style-type: none"> • ≤25% • 26–50% • 51–75% • > 75% | <ul style="list-style-type: none"> • Dichotomized as ≤50% and >50% • The 6-month summary variable (dichotomized) was used whenever available • If 6-month summary variable was missing, then the most commonly reported dichotomized proportion of shifts at bedside was used • If no answer was most common, the most recently reported answer was used • If participants reported providing no patient care or working no shifts in the prior 2 weeks for a given survey, they were assigned the lowest exposure category (≤50%) for that survey |
| Performed/were present during AGPs ^{b,d} | <ul style="list-style-type: none"> • Monthly | <ul style="list-style-type: none"> • Yes • No | <ul style="list-style-type: none"> • If participants reported performing/being present for ≥1 AGP over the 6-month survey period, they were categorized as Yes, and No otherwise • If participants reported providing no patient care or working no shifts in the prior 2 weeks for a given survey, they were assigned the lowest exposure category (No) for that survey |
| Able to consistently social distance from co-workers ^b | <ul style="list-style-type: none"> • Monthly | <ul style="list-style-type: none"> • Yes • No • Unsure | <ul style="list-style-type: none"> • The most commonly reported answer was used • If no answer was most common, the most recently reported was used • If participants reported providing no patient care or working no shifts in the prior 2 weeks for a given survey, they were assigned a separate value for that survey • “Unsure” was coded as missing |
| Close contact with a SARS-CoV-2 coworker ^c | <ul style="list-style-type: none"> • Summary question for the 6-month survey only | <ul style="list-style-type: none"> • Yes • No | <ul style="list-style-type: none"> • Categorization was kept as Yes versus No • If the 6-month summary variable was missing, this was coded as missing |
| Practiced universal masking at work ^b | <ul style="list-style-type: none"> • Monthly | <ul style="list-style-type: none"> • None or nearly none of the time | <ul style="list-style-type: none"> • Dichotomized as nearly all/all versus less than all the time (includes some, half, or more than half but not all the time) |

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| | | <ul style="list-style-type: none"> • Some, but less than half of the time • Approximately half of the time • More than half, but not all of the time • Nearly all or all of the time | <ul style="list-style-type: none"> • The most commonly reported answer was used • If no answer was most common, the most recently reported was used • If participants reported providing no patient care or working no shifts in the prior 2 weeks for a given survey, they were assigned a separate value for that survey |
| Had CDC-defined high-risk exposure to SARS-CoV-2 ^{b,e} | <ul style="list-style-type: none"> • Monthly | <ul style="list-style-type: none"> • Determined for each survey based on a combination of questions asking about prolonged close contact with a patient(s) on a non-COVID cohort that participants later found out tested positive for COVID-19, whether the patient was wearing a mask or was intubated, PPE worn by the patient and participant, and patient care activities | <ul style="list-style-type: none"> • If participants had a high-risk exposure for any survey, they were categorized as Yes, and No otherwise • If participants reported providing no patient care or working no shifts in the prior 2 weeks for a given survey, they were assigned the lowest exposure category (No) for that survey |
| Close contact with a SARS-CoV-2 infected individual in the community ^c | <ul style="list-style-type: none"> • Summary question for the 6-month survey | <ul style="list-style-type: none"> • Yes • No | <ul style="list-style-type: none"> • If the 6-month summary variable was missing, this was coded as missing |
| Used public transportation ^b | <ul style="list-style-type: none"> • Monthly | <ul style="list-style-type: none"> • Check box if yes | <ul style="list-style-type: none"> • The most commonly reported answer was used • If no answer was most common, the most recently reported was used |
| Attending a gathering with more than 10 people ^b | <ul style="list-style-type: none"> • Monthly | <ul style="list-style-type: none"> • Check box if yes | <ul style="list-style-type: none"> • If participants checked Yes for any survey, they were categorized as Yes, and No otherwise |
| Cumulative incidence of COVID-19 by ZIP code/1,000 | <ul style="list-style-type: none"> • N/A | <ul style="list-style-type: none"> • N/A | <ul style="list-style-type: none"> • Calculated using COVID-19 surveillance data supplied by the Georgia Department of Public Health (GDPH) and population census data from the U.S. Census Bureau website (data.census.gov) • The cumulative number of COVID-19 cases (confirmed and probable) from 1 week prior to enrollment to 1 week prior to 6-month blood draws, divided by the population |

census for zip code of residence and multiplied by 1,000,
for each participant

Time-invariant variables are shaded in blue, time-variant occupational variables in yellow, and time-variant community variables in green

- a) Immunocompromised included: autoimmune or rheumatologic disease, active cancer, hematopoietic stem cell transplant recipient, other immunosuppressing condition, immunosuppressant medications
- b) All questions refer to the two weeks prior to the survey completion date
- c) All questions refer to either the two weeks prior (for individual survey variables) or six months prior (for 6-month summary variables) to the survey completion date
- d) The following procedures were specifically asked about as AGPs: airway suctioning, non-invasive positive pressure ventilation, manual (bag) ventilation, nebulizer treatments, intubation, cardiopulmonary resuscitation, chest physiotherapy, mini-BAL, breaking ventilation circuit, sputum induction, bronchoscopy, high-flow oxygen delivery
- e) A high-risk occupational exposure to SARS-CoV-2 was defined according to the CDC guidelines as having prolonged close contact with a patient(s) on a non-COVID-19 unit that later was found to have SARS-CoV-2 while: 1) the HCP was not wearing a respirator or facemask 2) the HCP was not wearing eye protection while the patient was not wearing a face covering, or 3) the HCP was not wearing all recommended PPE (gown, gloves, eye protection and respirator) while performing an AGP

Abbreviations: AGP, aerosolized-generating procedure; ICU, intensive care unit; PPE, personal protective equipment

Supplemental Table 2: Summary of time-varying characteristics of healthcare personnel by monthly survey

| Variable | Month 1 (n = 296^a) | Month 2 (n = 293) | Month 3 (n = 284) | Month 4 (n = 288) | Month 5 (n = 290) | Month 6 (n = 281) |
|--|--|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Survey completion dates (2020) | Jun 4–Aug 24 | Jul 1–Aug 4 | Jul 23–Oct 6 | Aug 27–Oct 16 | Oct 5–Nov 26 | Nov 2–Dec 28 |
| Primary work setting^b | | | | | | |
| Inpatient medical/surgical floor | 114 (39.7) | 107 (37.7) | 108 (39.1) | 113 (40.4) | 112 (40.4) | 105 (38.2) |
| Emergency department | 39 (13.6) | 35 (12.3) | 37 (13.4) | 32 (11.4) | 35 (12.6) | 37 (13.5) |
| ICU | 65 (22.6) | 57 (20.1) | 56 (20.3) | 57 (20.4) | 55 (19.9) | 57 (20.7) |
| Outpatient/other | 14 (4.9) | 10 (3.5) | 17 (6.2) | 17 (6.1) | 16 (5.8) | 17 (6.2) |
| No patient care | 55 (19.2) | 75 (26.4) | 58 (21) | 61 (21.8) | 59 (21.3) | 59 (21.5) |
| Proportion of shifts in COVID-19 units^c | | | | | | |
| None | 181 (61.1) | 172 (58.7) | 156 (54.9) | 180 (62.5) | 196 (67.6) | 188 (66.9) |
| At least some | 115 (38.9) | 121 (41.3) | 128 (45.1) | 108 (37.5) | 94 (32.4) | 93 (33.1) |
| Average proportion of shift spent directly at bedside^c | | | | | | |
| ≤50% | 139 (47) | 156 (53.2) | 149 (52.5) | 148 (51.4) | 163 (56.2) | 151 (53.7) |
| >50% | 157 (53) | 137 (46.8) | 135 (47.5) | 140 (48.6) | 127 (43.8) | 130 (46.3) |
| Performed or present during ≥1 AGP^{c,d} | 133 (44.9) | 113 (38.6) | 115 (40.5) | 117 (40.6) | 114 (39.3) | 102 (36.3) |
| Able to consistently social distance from co-workers | | | | | | |
| No | 140 (48.3) | 108 (37.9) | 104 (37.5) | 102 (36.4) | 108 (37.8) | 96 (35.8) |
| Yes | 93 (32.1) | 101 (35.4) | 114 (41.2) | 117 (41.8) | 117 (40.9) | 110 (41) |
| No patient care | 57 (19.7) | 76 (26.7) | 59 (21.3) | 61 (21.8) | 61 (21.3) | 62 (23.1) |
| Practiced universal masking at work | | | | | | |
| All/nearly all the time | 183 (61.8) | 189 (64.5) | 204 (71.8) | 210 (72.9) | 202 (69.7) | 204 (72.6) |
| Less than all the time | 56 (18.9) | 28 (9.6) | 21 (7.4) | 17 (5.9) | 27 (9.3) | 15 (5.3) |
| No patient care | 57 (19.3) | 76 (25.9) | 59 (20.8) | 61 (21.2) | 61 (21) | 62 (22.1) |
| Had CDC-defined high-risk exposure to SARS-CoV-2^{c,e} | 9 (3.0) | 14 (4.7) | 5 (1.7) | 2 (0.7) | 5 (1.7) | 9 (3.0) |

Activities outside of work

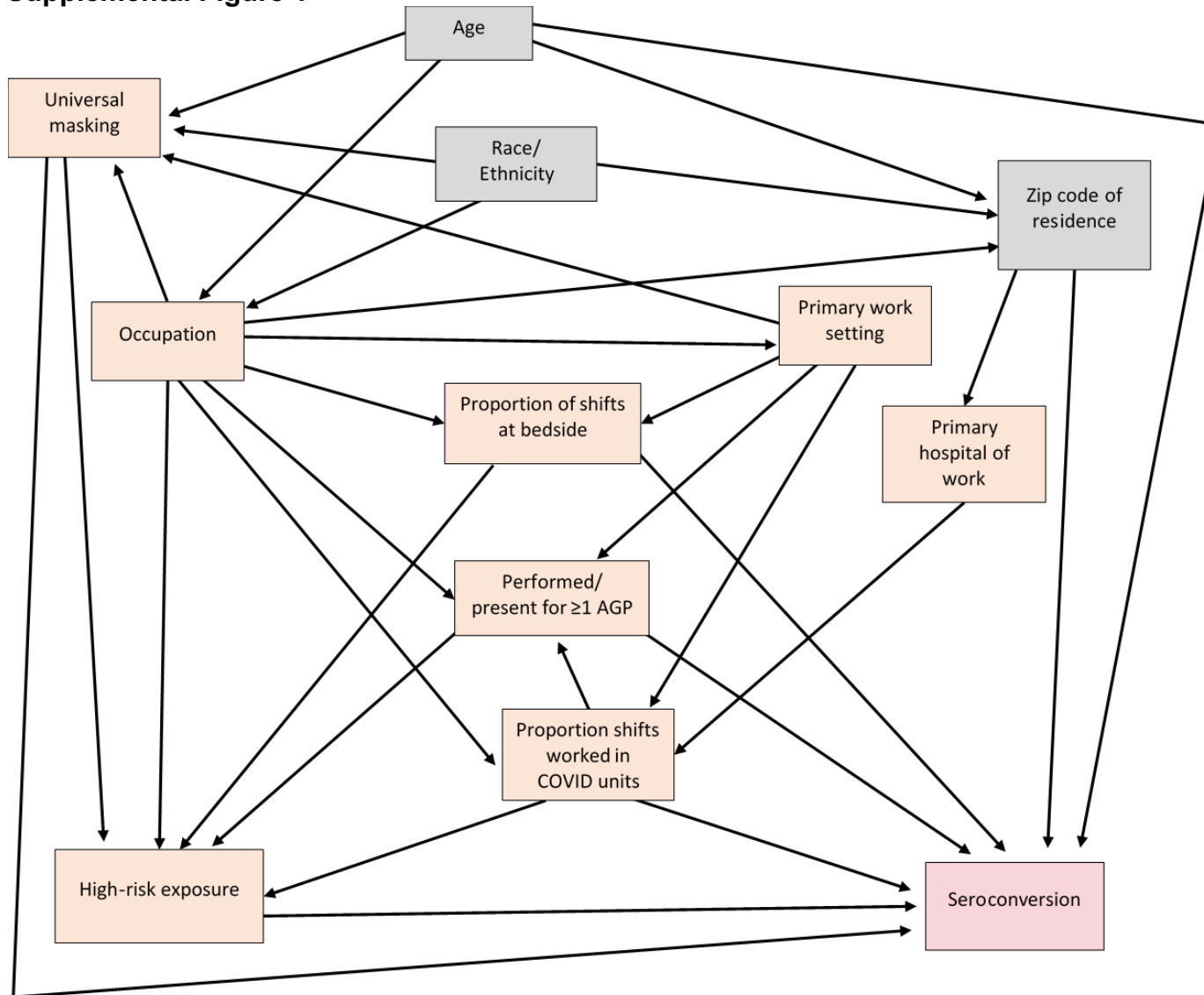
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|------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Used public transport | 11 (3.7) | 25 (8.4) | 17 (5.7) | 28 (9.4) | 40 (13.3) | 36 (12.7) |
| Attended a gathering of >10 people | 62 (20.6) | 67 (22.6) | 56 (18.7) | 66 (22.1) | 89 (29.7) | 83 (29.3) |

All variables are no. (%) unless otherwise stated

- a) Number of participants with a completed survey
- b) Excludes HCP where primary location was not able to be determined due to multiple locations being reported
- c) Participants without patient care were included in the reference group
- d) The following procedures were specifically included as AGPs: airway suctioning, non-invasive positive pressure ventilation, manual (bag) ventilation, nebulizer treatments, intubation, cardiopulmonary resuscitation, chest physiotherapy, mini-bronchoalveolar lavage, breaking ventilation circuit, sputum induction, bronchoscopy, high-flow oxygen delivery
- e) A high-risk occupational exposure to SARS-CoV-2 was defined based on the CDC guidance as having prolonged close contact with a patient(s) with SARS-CoV-2 infection while: 1) the HCP was not wearing a respirator or facemask; 2) the HCP was not wearing eye protection while the patient was not wearing a facemask or intubated; or 3) the HCP was not wearing all recommended PPE (gown, gloves, eye protection and respirator) while performing an AGP.

Abbreviations: AGP, aerosol generating procedure; CDC, Centers for Disease Control and Prevention; HCP, healthcare personnel; ICU, intensive care unit; IQR, interquartile range; PPE, personal protective equipment

Supplemental Figure 1



Directional Acyclic Graph (DAG) for associations between occupational risk factors (in orange) and non-occupational risk factors (in gray) and SARS-CoV-2 seroconversion