

Supplemental Table S1: Adjusted Resident COVID-19 Log-Linear Estimates of the Zero Inflated Negative Binomial Model¹

| | | Parameter Estimate | Std. Error | 95% Lower Limit | 95% Upper Limit | P-value |
|---------------------------|--------------------------------|--------------------|------------|-----------------|-----------------|---------|
| Negative Binomial | | | | | | |
| Time | Week | -0.07 | 0.02 | -0.10 | -0.03 | <.0001 |
| Vaccinations | Three Weeks Post Clinic | -0.13 | 0.07 | -0.26 | 0.01 | 0.06 |
| | Four Weeks Post Clinic | -0.17 | 0.09 | -0.34 | 0.00 | 0.05 |
| | Five Weeks Post Clinic | -0.39 | 0.11 | -0.61 | -0.17 | 0.00 |
| | Six Weeks Post Clinic | -0.45 | 0.15 | -0.74 | -0.15 | 0.00 |
| County | Weekly Covid Rate | 0.01 | 0.00 | 0.01 | 0.01 | <.0001 |
| Bed Size | <=50 Beds | -0.41 | 0.20 | -0.81 | -0.01 | 0.04 |
| | 50-120 Beds | Ref. | . | . | . | . |
| | >120Beds | -0.14 | 0.10 | -0.35 | 0.06 | 0.18 |
| Urban | Yes | -0.04 | 0.16 | -0.35 | 0.27 | 0.82 |
| | No | Ref. | . | . | . | . |
| Racial Minority | Low | Ref. | . | . | . | . |
| | Medium | 0.20 | 0.16 | -0.11 | 0.51 | 0.21 |
| | Medium-High | 0.15 | 0.17 | -0.18 | 0.47 | 0.37 |
| | High | -0.22 | 0.18 | -0.58 | 0.13 | 0.21 |
| Hispanic Non-White | Low | Ref. | . | . | . | . |
| | Medium | -0.06 | 0.15 | -0.36 | 0.24 | 0.69 |
| | Medium-High | -0.25 | 0.14 | -0.52 | 0.03 | 0.08 |
| | High | -0.87 | 0.15 | -1.18 | -0.57 | <.0001 |
| RN Staffing | <=0.449 | -0.08 | 0.11 | -0.30 | 0.14 | 0.47 |
| | 0.449-0.987 | Ref. | . | . | . | . |
| | > 0.987 | -0.18 | 0.13 | -0.43 | 0.07 | 0.16 |
| Zero Model | | | | | | |
| Time | Week | -0.07 | 0.03 | -0.13 | -0.01 | 0.03 |
| County | Weekly Covid Rate | -0.05 | 0.01 | -0.06 | -0.04 | <.0001 |
| Bed Size | <=50 Beds | 0.22 | 0.26 | -0.29 | 0.73 | 0.39 |
| | 50-120 Beds | Ref. | . | . | . | . |
| | >120 Beds | -0.84 | 0.15 | -1.12 | -0.55 | <.0001 |
| Urban | Yes | -0.60 | 0.17 | -0.93 | -0.27 | 0.00 |
| | No | Ref. | . | . | . | . |
| Racial Minority | Low | Ref. | . | . | . | . |
| | Medium | -0.23 | 0.18 | -0.57 | 0.12 | 0.20 |
| | Medium-High | 0.12 | 0.19 | -0.25 | 0.50 | 0.53 |
| | High | 0.32 | 0.21 | -0.09 | 0.74 | 0.13 |
| Hispanic Non-White | Low | Ref. | . | . | . | . |
| | Medium | -0.13 | 0.17 | -0.47 | 0.21 | 0.46 |
| | Medium-High | -0.07 | 0.16 | -0.38 | 0.25 | 0.68 |
| | High | -0.64 | 0.23 | -1.09 | -0.20 | 0.00 |

¹ Log-linear estimates modeling the adjusted effect of the independent indicators on the resident COVID-19 case counts per resident-weeks with a random intercept for each cluster-facility in the negative binomial state

Supplemental Table S2: Adjusted Resident COVID-19 Mortality Log-Linear Estimates of the Zero Inflated Negative Binomial Model²

| | | Parameter Estimate | Std. Error | 95% Lower Limit | 95% Upper Limit | P-value |
|---------------------------|--------------------------------|--------------------|------------|-----------------|-----------------|---------|
| Negative Binomial | | | | | | |
| Time | Week | 0.00 | 0.03 | -0.05 | 0.05 | 0.92 |
| Vaccinations | Three Weeks Post Clinic | -0.10 | 0.09 | -0.27 | 0.07 | 0.25 |
| | Four Weeks Post Clinic | -0.25 | 0.11 | -0.46 | -0.04 | 0.02 |
| | Five Weeks Post Clinic | -0.53 | 0.14 | -0.80 | -0.26 | 0.00 |
| | Six Weeks Post Clinic | -0.80 | 0.19 | -1.17 | -0.43 | <.0001 |
| County | Weekly Covid Rate | 0.00 | 0.00 | 0.00 | 0.00 | 0.84 |
| Bed Size | <=50 Beds | -0.62 | 0.28 | -1.18 | -0.07 | 0.03 |
| | 50-120 Beds | | | | | |
| | >120Beds | 0.04 | 0.13 | -0.22 | 0.30 | 0.76 |
| Urban | Yes | -0.19 | 0.20 | -0.58 | 0.20 | 0.34 |
| | No | Ref. | . | . | . | . |
| Racial Minority | Low | Ref. | . | . | . | . |
| | Medium | 0.13 | 0.20 | -0.26 | 0.52 | 0.51 |
| | Medium-High | -0.09 | 0.21 | -0.50 | 0.32 | 0.66 |
| | High | -0.91 | 0.23 | -1.36 | -0.46 | <.0001 |
| Hispanic Non-White | Low | | | | | |
| | Medium | -0.25 | 0.19 | -0.63 | 0.13 | 0.20 |
| | Medium-High | -0.61 | 0.18 | -0.96 | -0.26 | 0.00 |
| | High | -1.69 | 0.20 | -2.09 | -1.29 | <.0001 |
| RN Staffing | <=0.449 | 0.05 | 0.14 | -0.23 | 0.32 | 0.73 |
| | 0.449-0.987 | Ref. | . | . | . | . |
| | > 0.987 | -0.38 | 0.16 | -0.70 | -0.07 | 0.02 |
| Zero Model | | | | | | |
| Time | Week | -0.15 | 0.04 | -0.24 | -0.07 | 0.00 |
| County | Weekly Covid Rate | -0.04 | 0.01 | -0.05 | -0.03 | <.0001 |
| Bed Size | <=50 Beds | 0.12 | 0.35 | -0.57 | 0.82 | 0.73 |
| | 50-120 Beds | Ref. | . | . | . | . |
| | >120 Beds | -0.13 | 0.16 | -0.44 | 0.17 | 0.39 |
| Urban | Yes | -0.38 | 0.19 | -0.75 | -0.01 | 0.05 |
| | No | Ref. | . | . | . | . |
| Racial Minority | Low | Ref. | . | . | . | . |
| | Medium | -0.11 | 0.20 | -0.51 | 0.28 | 0.58 |
| | Medium-High | 0.02 | 0.24 | -0.44 | 0.48 | 0.93 |
| | High | 0.00 | 0.27 | -0.53 | 0.53 | 1.00 |
| Hispanic Non-White | Low | Ref. | . | . | . | . |
| | Medium | -0.39 | 0.20 | -0.78 | 0.00 | 0.05 |
| | Medium-High | -0.41 | 0.19 | -0.79 | -0.03 | 0.03 |
| | High | -0.84 | 0.30 | -1.43 | -0.24 | 0.01 |

² Log-linear estimates modeling the adjusted effect of the independent indicators on the resident COVID-19 mortality counts per resident-weeks with a random intercept for each cluster-facility in the negative binomial state.

Supplemental Table S3: Adjusted Staff COVID-19 Log-Linear Estimates of the Zero Inflated Negative Binomial Model³

| | | Parameter Estimate | Std. Error | 95% Lower Limit | 95% Upper Limit | P-value |
|---------------------------|--------------------------------|--------------------|------------|-----------------|-----------------|---------|
| Negative Binomial | | | | | | |
| Time | Week | 0.04 | 0.01 | 0.02 | 0.06 | 0.00 |
| Vaccinations | Three Weeks Post Clinic | -0.16 | 0.04 | -0.25 | -0.08 | 0.00 |
| | Four Weeks Post Clinic | -0.28 | 0.06 | -0.39 | -0.17 | <.0001 |
| | Five Weeks Post Clinic | -0.45 | 0.07 | -0.59 | -0.31 | <.0001 |
| | Six Weeks Post Clinic | -0.67 | 0.10 | -0.87 | -0.48 | <.0001 |
| County | Weekly Covid Rate | 0.01 | 0.00 | 0.01 | 0.01 | <.0001 |
| Bed Size | <=50 Beds | 0.18 | 0.11 | -0.04 | 0.40 | 0.10 |
| | 50-120 Beds | Ref. | . | . | . | . |
| | >120Beds | -0.18 | 0.06 | -0.30 | -0.06 | 0.00 |
| Urban | Yes | -0.04 | 0.09 | -0.22 | 0.14 | 0.65 |
| | No | Ref. | . | . | . | . |
| Racial Minority | Low | Ref. | . | . | . | . |
| | Medium | 0.19 | 0.09 | 0.01 | 0.36 | 0.04 |
| | Medium-High | 0.08 | 0.10 | -0.11 | 0.26 | 0.43 |
| | High | -0.11 | 0.10 | -0.31 | 0.09 | 0.28 |
| Hispanic Non-White | Low | Ref. | . | . | . | . |
| | Medium | -0.05 | 0.09 | -0.23 | 0.13 | 0.57 |
| | Medium-High | -0.39 | 0.08 | -0.54 | -0.23 | <.0001 |
| | High | -0.74 | 0.09 | -0.91 | -0.56 | <.0001 |
| RN Staffing | <=0.449 | -0.02 | 0.07 | -0.15 | 0.12 | 0.81 |
| | 0.449-0.987 | Ref. | . | . | . | . |
| | > 0.987 | -0.18 | 0.07 | -0.32 | -0.04 | 0.01 |
| Zero Model | | | | | | |
| Time | Week | 0.08 | 0.04 | 0.00 | 0.16 | 0.06 |
| County | Weekly Covid Rate | -0.08 | 0.01 | -0.11 | -0.06 | <.0001 |
| Bed Size | <=50 Beds | -0.01 | 0.33 | -0.65 | 0.64 | 0.98 |
| | 50-120 Beds | Ref. | . | . | . | . |
| | >120 Beds | -1.65 | 0.31 | -2.26 | -1.05 | <.0001 |
| Urban | Yes | -0.60 | 0.23 | -1.05 | -0.15 | 0.01 |
| | No | Ref. | . | . | . | . |
| Racial Minority | Low | Ref. | . | . | . | . |
| | Medium | -0.25 | 0.24 | -0.71 | 0.22 | 0.30 |
| | Medium-High | 0.16 | 0.27 | -0.37 | 0.69 | 0.56 |
| | High | 0.17 | 0.31 | -0.44 | 0.79 | 0.58 |
| Hispanic Non-White | Low | Ref. | . | . | . | . |
| | Medium | 0.62 | 0.23 | 0.16 | 1.08 | 0.01 |
| | Medium-High | -0.39 | 0.26 | -0.89 | 0.11 | 0.13 |
| | High | -1.03 | 0.47 | -1.95 | -0.11 | 0.03 |

³ Log-linear estimates modeling the adjusted effect of the independent indicators on the staff COVID-19 case counts per FTE staff-weeks with a random intercept for each cluster-facility in the negative binomial state.