**Table 1** COVID-19 outbreak key outbreak and restrictions dates and details per state

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| COVID-19 outbreak | Date | Study date\* | State |  |  |  |  |  |  |  |
|  |  |  | NSW | VIC | QLD | WA | SA | TAS | ACT | NT |
| Alpha | 18-Mar-20 |  | Australia-wide restrictions introduced, borders closed |
|  | Mar-20 |  | Stay at home order introduced | Stay at home order introduced | Additional restrictions introduced |  |  | Additional restrictions introduced | Stay at home order introduced |  |
|  | Apr-20 |  | Some restrictions eased |  | Some restrictions eased | Some restrictions eased |  | Additional restrictions introduced |  | Some restrictions eased |
|  | May-20 |  | Restrictions further eased | Some restrictions eased | Restrictions further eased | Restrictions further eased | Some restrictions eased | Some restrictions eased | Some restrictions eased  |  |
|  | Jun-20 |  | Restrictions further eased | Stay at home order introduced | Restrictions further eased | Restrictions further eased | Restrictions further eased | Some restrictions eased (home visits, sport) | Restrictions further eased | Stay at home order introduced in Darwin |
|  | Aug-20 | BL |  | Additional restrictions introduced |  |  |  |  |  | Stay at home order introduced then eased in Darwin |
|  | Sep-20 | BL |  | Some restrictions eased |  |  |  |  |  |  |
|  | Oct-20 | BL |  | Stay at home order eased |  |  |  |  |  |  |
|  | Nov-20 | BL |  |  |  |  | Stay at home order introduced then eased |  |  |  |
|  | Dec-20 | BL | Northern Beaches stay at home order introduced |  |  |  |  |  |  |  |
|  | Jan-20 | FU1 | Northern Beaches stay at home order eased |  |  | Stay at home order introduced in Perth |  |  |  |  |
|  | Feb-21 | FU1 | Restrictions further eased | Stay at home order introduced then eased |  | Stay at home order eased |  |  |  |  |
|  | Mar-21 | FU1 |  |  | Stay at home order introduced then eased in Brisbane |  |  |  |  |  |
|  | Apr-21 | FU1 |  |  |  | Stay at home order introduced then eased in Perth |  |  |  |  |
|  | May-21 | FU1 | Additional restrictions introduced and eased | Stay at home order introduced |  | Additional restrictions introduced |  |  |  |  |
| Delta | Jun-21 | FU1 | Stay at home order introduced in Greater Sydney | Stay at home order eased | Stay at home order introduced then eased in Brisbane | Additional restrictions introduced |  |  |  | Stay at home order introduced then eased in Darwin |
|  | Jul-21 | FU2 | Stay at home order introduced in Central West NSW | Stay at home order introduced then eased | Stay at home order introduced then eased in South East Queensland | Stay at home order introduced then eased in Perth | Stay at home order introduced then eased |  |  |  |
|  | Aug-21 | FU2 | Additional restrictions introduced | Stay at home order introduced |  |  |  |  | Stay at home order introduced | Stay at home order introduced then eased in Darwin |
|  | Sep-21 | FU2 | Restrictions eased in most regional areas |  |  |  |  |  | Stay at home order eased |  |
|  | Oct-21 | FU2 | Some restrictions in regional NSW, Stay at home order eased  | Stay at home order eased |  |  |  | Stay at home order introduced then eased in Southern Tasmania |  |  |
| Omicron | Nov-21 | FU2 |   |   |   |   |   |   |   |   |
|  |  |  |  |  |  |  |  |  |  |  |

\*BL = Baseline, FU1 = Follow-up 1, FU2 = Follow-up

**Table 2** Coding glossary of demographic and living condition variables

|  |  |
| --- | --- |
| Variable | Coding Description |
| Gender (ref: male) | 0 male, 1 female, 2 other |
| LGBTIQ+ | Binary coding, 1 identifies as LGBTIQ+ |
| Age | Year in numbers |
| Aboriginal and/or Torres Strait Islander | Binary coding, 1 identifies as Aboriginal and/or Torres Strait Islander |
| Mental health diagnoses (Lifetime) | Binary coding, 1 indicates has been diagnosed with mental disorder over their lifetime |
| Tertiary course(s) completed | Binary coding, 1 indicates have completed post-high school qualification  |
| Current income | Ordinal variable 1 <$300 p/week2 >$300 p/week, <$575 p/week 3 >$575, <$1075 p/week4 >$1075, <$1700 p/week5 >$1700, <$2400 p/week6 $2400+ p/week |
| Income change with COVID | 0 No change in weekly income from pre-COVID1 Positive Change (income increase since COVID)2 Negative Change (income decrease since COVID) |
| Current Employment  | 0 Unemployed1 Student full-time/part-time2 Employed full-time/part-time/casual3 Employed as a sub-contractor or contractor (e.g. uber driver, consultant)4 Homemaker/volunteer/retired |
| Bothered by noise at home | 0 ‘Not very often’ or ‘never’ bothered by noise when at home1 ‘fairly often’ or ‘very often’ bothered by noise when at home |
| Major building probs count | A count of major building problems in current dwelling out of the following options:Rising damp, mould, cracks, problems with foundations, floors, alignment, rot or termites, electrical problems, roof problems or other problems |
| Adequate natural light | 0 Not satisfied with natural light in dwelling1 Satisfied with natural light in dwelling |
| Household family structure  | 0 Couple with no children1 Couple with children2 One parent family with children3 Parents with adult children4 Lone person5 Other structure (extended family or multiple families)6 Sharing living arrangement with housemates |

**Table 3** Multilevel longitudinal analysis predicting loneliness (DJG-S), including social determinant predictors (Model 1) and social determinant predictors with resilience and control covariates (Model 2).

|  | Model 1 | Model 2 |
| --- | --- | --- |
|  |  |  |  | 95% CI |  |  |  | 95% CI |
|  | Coef. | Std. Err. | P>z | Lower | Higher | Coef. | Std. Err. | P>z | Lower | Higher |
| Cons | 5.76 | 0.83 | 0.000 | 4.14 | 7.39 | 8.57 | 0.75 | 0.000 | 7.10 | 10.03 |
| Time |  |  |  |  |  |  |  |  |  |  |
| Years | -0.81 | 0.30 | 0.006 | -1.40 | -0.23 | -0.83 | 0.30 | 0.005 | -1.41 | -0.25 |
| Years Sq | 0.71 | 0.24 | 0.003 | 0.24 | 1.17 | 0.73 | 0.23 | 0.002 | 0.27 | 1.19 |
| Micro/Personal |
| Demographics and Life Circumstances |  |  |  |  |  |  |  |  |
| Gender (ref: male) |  |  |  |  |  |  |  |  |  |
| Female | -0.25 | 0.09 | 0.006 | -0.43 | -0.07 | -0.11 | 0.08 | 0.180 | -0.27 | 0.05 |
| Other | -0.37 | 0.31 | 0.228 | -0.98 | 0.23 | -0.30 | 0.28 | 0.289 | -0.84 | 0.25 |
| LGBTIQ+ | 0.16 | 0.11 | 0.137 | -0.05 | 0.37 | 0.11 | 0.10 | 0.256 | -0.08 | 0.30 |
| Age | 0.00 | 0.00 | 0.240 | -0.01 | 0.00 | 0.00 | 0.00 | 0.149 | -0.01 | 0.00 |
| Aboriginal and/or Torres Strait Islander | -0.17 | 0.12 | 0.152 | -0.41 | 0.06 | -0.15 | 0.11 | 0.168 | -0.36 | 0.06 |
| Mental health diagnoses (Lifetime) | 0.41 | 0.08 | 0.000 | 0.26 | 0.57 | 0.10 | 0.07 | 0.173 | -0.04 | 0.24 |
| Tertiary course(s) completed | -0.05 | 0.07 | 0.412 | -0.18 | 0.08 | 0.01 | 0.06 | 0.831 | -0.10 | 0.13 |
| Current income | -0.07 | 0.03 | 0.041 | -0.14 | 0.00 | 0.00 | 0.03 | 0.991 | -0.06 | 0.06 |
| Income change with COVID (ref: no change) |  |  |  |  |  |  |  |
| Income increase | -0.17 | 0.14 | 0.220 | -0.44 | 0.10 | -0.17 | 0.12 | 0.180 | -0.41 | 0.08 |
| Income loss | 0.15 | 0.10 | 0.140 | -0.05 | 0.36 | 0.15 | 0.09 | 0.116 | -0.04 | 0.33 |
| Current Employment (ref: Unemployed) |  |  |  |  |  |  |  |
| Student full-time/part-time | 0.19 | 0.18 | 0.295 | -0.17 | 0.55 | 0.24 | 0.16 | 0.147 | -0.08 | 0.56 |
| Employed full-time/part-time/casual  | -0.13 | 0.14 | 0.337 | -0.40 | 0.14 | 0.01 | 0.12 | 0.959 | -0.23 | 0.25 |
| Employed as a sub-contractor or contractor (e.g. uber driver, consultant) | -0.21 | 0.24 | 0.389 | -0.68 | 0.26 | -0.15 | 0.21 | 0.487 | -0.57 | 0.27 |
| Homemaker/volunteer/retired | -0.04 | 0.16 | 0.789 | -0.35 | 0.27 | 0.07 | 0.14 | 0.599 | -0.20 | 0.35 |
| Stressful life event count | 0.09 | 0.03 | 0.003 | 0.03 | 0.15 | 0.05 | 0.03 | 0.079 | -0.01 | 0.10 |
| Living Conditions |  |  |  |  |  |  |  |  |  |
| Bothered by noise at home | 0.22 | 0.10 | 0.026 | 0.03 | 0.41 | 0.07 | 0.09 | 0.402 | -0.10 | 0.25 |
| Major building probs count | 0.11 | 0.04 | 0.002 | 0.04 | 0.18 | 0.07 | 0.03 | 0.033 | 0.01 | 0.13 |
| Adequate natural light | -0.36 | 0.10 | 0.000 | -0.56 | -0.16 | -0.31 | 0.09 | 0.001 | -0.49 | -0.13 |
| Household family structure (ref: Couple with no children) |  |  |  |  |  |  |
| Couple with children | 0.29 | 0.12 | 0.019 | 0.05 | 0.53 | 0.19 | 0.11 | 0.084 | -0.03 | 0.40 |
| One parent family with children | 0.39 | 0.21 | 0.063 | -0.02 | 0.80 | 0.26 | 0.19 | 0.163 | -0.10 | 0.62 |
| Parents with adult children | 0.25 | 0.14 | 0.071 | -0.02 | 0.53 | 0.28 | 0.12 | 0.025 | 0.04 | 0.52 |
| Lone person | 0.28 | 0.12 | 0.024 | 0.04 | 0.52 | 0.31 | 0.11 | 0.005 | 0.09 | 0.52 |
| Other structure (e.g., extended family or multiple families) | -0.03 | 0.20 | 0.890 | -0.41 | 0.36 | -0.11 | 0.17 | 0.511 | -0.46 | 0.23 |
| Shared living arrangement with housemates | -0.14 | 0.15 | 0.340 | -0.43 | 0.15 | -0.02 | 0.13 | 0.897 | -0.27 | 0.24 |
| Resilience and Control covariates |  |  |  |  |  |  |  |  |
| Perceived Control |  |  |  |  | -0.07 | 0.01 | 0.000 | -0.09 | -0.06 |
| Resilience |  |  |  |  |  | -0.03 | 0.01 | 0.000 | -0.04 | -0.02 |
| Meso/Community |
| Neighbourhood and community characteristics |  |  |  |  |  |  |  |
| Remoteness Structure Index (ref: Major Cities of Australia) |  |  |  |  |  |  |
| Inner Regional Australia | 0.39 | 0.11 | 0.000 | 0.18 | 0.61 | 0.30 | 0.10 | 0.002 | 0.11 | 0.50 |
| Outer Regional Australia | 0.26 | 0.16 | 0.103 | -0.05 | 0.58 | 0.23 | 0.14 | 0.101 | -0.05 | 0.51 |
| Remote Australia | -0.23 | 0.47 | 0.631 | -1.16 | 0.70 | -0.25 | 0.41 | 0.549 | -1.06 | 0.56 |
| Very Remote Australia | -0.04 | 0.67 | 0.952 | -1.35 | 1.27 | -0.10 | 0.58 | 0.858 | -1.25 | 1.04 |
| Index of Relative Socio-economic Disadvantage Score | 0.00 | 0.00 | 0.146 | 0.00 | 0.00 | 0.00 | 0.00 | 0.517 | 0.00 | 0.00 |
| Personal perceptions of neighbourhood and community |  |  |  |  |  |  |
| Neighbourhood belonging | -0.08 | 0.01 | 0.000 | -0.09 | -0.07 | -0.04 | 0.01 | 0.000 | -0.05 | -0.03 |
| Collective Resilience |  |  |  |  | -0.04 | 0.00 | 0.000 | -0.04 | -0.03 |
| Social Networks |  |  |  |  |  |  |  |  |  |
| Multiple group membership(s) (ref: No change since COVID-19) |  |  |  |  |  |  |
| Increase in group memberships since COVID | 0.01 | 0.14 | 0.949 | -0.27 | 0.29 | 0.04 | 0.13 | 0.736 | -0.20 | 0.29 |
| Decrease in group memberships since COVID | 0.37 | 0.09 | 0.000 | 0.20 | 0.54 | 0.28 | 0.08 | 0.000 | 0.13 | 0.44 |
| Macro/Societal |
| State/Territory of Residence (ref: New South Wales) |  |  |  |  |  |  |
| Victoria | 0.27 | 0.12 | 0.022 | 0.04 | 0.50 | 0.23 | 0.11 | 0.042 | 0.01 | 0.44 |
| Queensland | 0.30 | 0.19 | 0.114 | -0.07 | 0.68 | 0.38 | 0.18 | 0.035 | 0.03 | 0.74 |
| Northern Territory | 1.12 | 1.23 | 0.360 | -1.28 | 3.52 | 1.18 | 1.16 | 0.307 | -1.09 | 3.45 |
| South Australia | -0.39 | 0.25 | 0.119 | -0.89 | 0.10 | -0.43 | 0.24 | 0.071 | -0.89 | 0.04 |
| Western Australia | -0.37 | 0.27 | 0.167 | -0.91 | 0.16 | -0.49 | 0.26 | 0.058 | -0.99 | 0.02 |
| Tasmania | -0.57 | 0.34 | 0.087 | -1.23 | 0.08 | -0.46 | 0.31 | 0.143 | -1.08 | 0.16 |
| Australian Capital Territory | -0.16 | 0.26 | 0.548 | -0.67 | 0.35 | -0.11 | 0.24 | 0.661 | -0.58 | 0.37 |
| State/Territory x linear time (ref: New South Wales) |  |  |  |  |  |  |
| Victoria | -0.45 | 0.46 | 0.329 | -1.36 | 0.46 | -0.43 | 0.46 | 0.353 | -1.33 | 0.48 |
| Queensland | -0.44 | 0.69 | 0.524 | -1.80 | 0.92 | -0.53 | 0.69 | 0.447 | -1.88 | 0.83 |
| Northern Territory | -2.97 | 3.95 | 0.452 | -10.72 | 4.77 | -2.82 | 3.86 | 0.465 | -10.39 | 4.75 |
| South Australia | 2.13 | 0.97 | 0.029 | 0.22 | 4.03 | 2.14 | 0.96 | 0.026 | 0.26 | 4.03 |
| Western Australia | 0.60 | 0.95 | 0.527 | -1.26 | 2.46 | 0.58 | 0.95 | 0.537 | -1.27 | 2.44 |
| Tasmania | 0.99 | 1.12 | 0.379 | -1.21 | 3.18 | 1.05 | 1.11 | 0.346 | -1.13 | 3.23 |
| Australian Capital Territory | -0.50 | 1.03 | 0.628 | -2.52 | 1.52 | -0.50 | 1.03 | 0.624 | -2.51 | 1.51 |
| State/Territory x quadratic time (ref: New South Wales) |  |  |  |  |  |  |
| Victoria | 0.26 | 0.37 | 0.491 | -0.47 | 0.98 | 0.23 | 0.37 | 0.534 | -0.49 | 0.95 |
| Queensland | 0.25 | 0.53 | 0.636 | -0.79 | 1.30 | 0.27 | 0.53 | 0.615 | -0.77 | 1.30 |
| Northern Territory | 0.77 | 2.75 | 0.780 | -4.62 | 6.15 | 0.72 | 2.68 | 0.790 | -4.54 | 5.98 |
| South Australia | -1.39 | 0.75 | 0.063 | -2.85 | 0.08 | -1.44 | 0.73 | 0.049 | -2.88 | 0.00 |
| Western Australia | -0.46 | 0.71 | 0.514 | -1.85 | 0.93 | -0.38 | 0.70 | 0.588 | -1.76 | 1.00 |
| Tasmania | -0.98 | 0.84 | 0.243 | -2.62 | 0.66 | -1.06 | 0.83 | 0.199 | -2.68 | 0.56 |
| Australian Capital Territory | 0.68 | 0.84 | 0.418 | -0.97 | 2.32 | 0.67 | 0.83 | 0.422 | -0.96 | 2.30 |