Table S1. Criteria, source of information, and collection and processing methods of data from the countries included in the study

| Country                | Criteria under which it was included | Source of information about the COVID-19 cases and stringency of lockdown of the country | Method of collection & Processing |
|------------------------|--------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------|
| United States of America | a                                    | The number of COVID-19 cases during the study period for all the included countries were obtained from the following repository: https://datahub.io/core/covid-19#readme | The data which was available in the CSV format was downloaded. The data of the countries during the study period was extracted, cleaned and analyzed by using Microsoft Excel v19.0, R v3.6.2 (RStudio v1.1.383), and SPSS v21.0. |
| Spain                  | a                                    | The primary sources of the data for the above repository are mentioned in the same link shared above. |                                    |
| United Kingdom         | a,b                                  | The data on stringency index of the lockdown was obtained from the following tool: https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker |                                    |
| Canada                 | a                                    | All data are available in the public domain for download. |                                    |
| Italy                  | a,b                                  |                                                                                         |                                    |
| Germany                | a                                    |                                                                                         |                                    |
| Brazil                 | a                                    |                                                                                         |                                    |
| Turkey                 | a                                    |                                                                                         |                                    |
| India                  | a,b                                  |                                                                                         |                                    |
| New Zealand            | b                                    |                                                                                         |                                    |
| Vietnam                | b                                    |                                                                                         |                                    |
| Mexico                 | b                                    |                                                                                         |                                    |
| Sweden                 | c                                    |                                                                                         |                                    |
| Taiwan                 | c                                    |                                                                                         |                                    |
| Japan                  | c                                    |                                                                                         |                                    |
| Singapore              | c                                    |                                                                                         |                                    |

*Countries with the highest numbers of COVID-19 patients, †countries that had implemented the world’s stringent lockdown measures (maximum overall stringency index >80), ‡countries who combatted the disease effectively without a stringent lockdown.*

Table S2. Operational definitions of the variables used in principal component analysis [1]

| Variable                   | Operational definition                                                                 |
|----------------------------|----------------------------------------------------------------------------------------|
| Retail shops and recreation spots | Mobility trends for places such as restaurants, cafés, shopping centers, theme parks, museums, libraries and cinemas. |
| Groceries and pharmacy      | Mobility trends for places such as supermarkets, food warehouses, farmers markets, specialty food shops and pharmacies. |
| Parks                      | Mobility trends for places like national parks, public beaches, marinas, dog parks, plazas and public gardens. |
| Transit stations            | Mobility trends for places that are public transport hubs, such as underground, bus and train stations. |
| Workplace                   | Mobility trends for places of work.                                                     |
| Residential areas           | Mobility trends for places of residence.                                                |
| Country   | Coefficient | Estimate | 95% CI       | p-value |
|-----------|-------------|----------|--------------|---------|
| Brazil    | Intercept   | 7.2      | (6.4, 8.0)   | <0.001  |
|           | Lag 2       | –0.3     | (–1.4, 0.7)  | 0.530   |
|           | Lag 3       | –0.3     | (–1.5, 1.0)  | 0.666   |
|           | Lag 4       | 0.2      | (–1.0, 1.4)  | 0.735   |
|           | Lag 5       | 0.1      | (–1.1, 1.3)  | 0.869   |
|           | Lag 6       | –0.6     | (–1.8, 0.6)  | 0.335   |
|           | Lag 7       | 0.3      | (–0.9, 1.5)  | 0.583   |
|           | Lag 8       | 0.1      | (–1.1, 1.3)  | 0.868   |
|           | Lag 9       | 0.0      | (–1.2, 1.1)  | 0.956   |
|           | Lag 10      | 0.1      | (–1.1, 1.3)  | 0.882   |
|           | Lag 11      | 0.0      | (–1.2, 1.2)  | 0.993   |
|           | Lag 12      | 0.0      | (–1.2, 1.2)  | 0.984   |
|           | Lag 13      | 0.1      | (–1.0, 1.2)  | 0.876   |
|           | Lag 14      | –1.3     | (–2.3, –0.4) | 0.009   |
| Canada    | Intercept   | 16.9     | (13.7, 20.1) | <0.001  |
|           | Lag 2       | 3.3      | (–2.9, 9.5)  | 0.294   |
|           | Lag 3       | 1.9      | (–4.9, 8.8)  | 0.578   |
|           | Lag 4       | –1.7     | (–9.0, 5.6)  | 0.637   |
|           | Lag 5       | –2.6     | (–9.8, 4.7)  | 0.482   |
|           | Lag 6       | –0.8     | (–8.0, 6.4)  | 0.826   |
|           | Lag 7       | 2.4      | (–4.8, 9.6)  | 0.502   |
|           | Lag 8       | 0.7      | (–6.0, 7.3)  | 0.845   |
|           | Lag 9       | –1.1     | (–8.4, 6.3)  | 0.772   |
|           | Lag 10      | 2.8      | (–4.6, 10.3) | 0.448   |
|           | Lag 11      | –2.1     | (–9.7, 5.4)  | 0.571   |
|           | Lag 12      | 1.1      | (–5.3, 7.5)  | 0.740   |
|           | Lag 13      | –2.1     | (–8.0, 3.7)  | 0.474   |
|           | Lag 14      | –4.5     | (–9.9, 0.9)  | 0.099   |
| Germany   | Intercept   | 67.9     | (45.0, 90.8) | <0.001  |
|           | Lag 2       | 10.0     | (–10.2, 30.1) | 0.328  |
|           | Lag 3       | –5.7     | (–26.3, 14.9) | 0.581  |
|           | Lag 4       | –0.9     | (–22.1, 20.2) | 0.929  |
|           | Lag 5       | –2.8     | (–26.5, 20.8) | 0.812  |
|           | Lag 6       | 6.6      | (–17.0, 30.3) | 0.577  |
|           | Lag 7       | 6.5      | (–17.2, 30.3) | 0.585  |
|           | Lag 8       | 9.1      | (–14.7, 32.9) | 0.447  |
|           | Lag 9       | 1.1      | (–22.7, 24.9) | 0.927  |
|           | Lag 10      | 0.7      | (–23.3, 24.7) | 0.953  |
|           | Lag 11      | –9.1     | (–33.1, 15.0) | 0.455  |
|           | Lag 12      | –4.1     | (–25.4, 17.1) | 0.700  |
|           | Lag 13      | –17.7    | (–38.3, 3.0)  | 0.092   |
|           | Lag 14      | –4.9     | (–25.3, 15.4) | 0.629  |
| Country | Coefficient | Estimate | 95% CI     | p-value |
|---------|-------------|----------|------------|---------|
| India   | Intercept   | 8.4      | (6.7, 10.1)| <0.001  |
|         | Lag 2       | –1.5     | (–4.6, 1.5)| 0.322   |
|         | Lag 3       | 0.8      | (–2.8, 4.3)| 0.665   |
|         | Lag 4       | 0.6      | (–3.1, 4.2)| 0.757   |
|         | Lag 5       | 3.1      | (–0.6, 6.7)| 0.103   |
|         | Lag 6       | –2.1     | (–5.8, 1.6)| 0.262   |
|         | Lag 7       | –2.6     | (–6.2, 1.1)| 0.171   |
|         | Lag 8       | 1.0      | (–2.6, 4.7)| 0.579   |
|         | Lag 9       | –1.5     | (–5.1, 2.2)| 0.422   |
|         | Lag 10      | 1.0      | (–2.6, 4.6)| 0.587   |
|         | Lag 11      | **4.2**  | **(0.6, 7.8)**| **0.024** |
|         | Lag 12      | **–10.9**| **(–14.5, –7.3)**| **<0.001**|
|         | Lag 13      | **4.9**  | **(1.4, 8.4)**| **0.006**|
|         | Lag 14      | 2.0      | (–0.9, 5.0)| 0.178   |
| Italy   | Intercept   | 47.6     | (37.2, 58.1)| <0.001  |
|         | Lag 2       | 0.8      | (0.0, 4.3)| 0.105   |
|         | Lag 3       | 0.0      | (–1.6, 2.1)| 0.881   |
|         | Lag 4       | 0.0      | (–1.8, 1.9)| 0.997   |
|         | Lag 5       | 0.0      | (–1.5, 2.3)| 0.832   |
|         | Lag 6       | 0.3      | (–0.8, 3.3)| 0.495   |
|         | Lag 7       | 0.0      | (–1.7, 2.0)| 0.951   |
|         | Lag 8       | –0.2     | (–3.0, 1.0)| 0.604   |
|         | Lag 9       | 0.0      | (–1.9, 1.8)| 0.990   |
|         | Lag 10      | 0.0      | (–2.6, 1.3)| 0.732   |
|         | Lag 11      | 0.2      | (–0.9, 3.3)| 0.533   |
|         | Lag 12      | 0.0      | (–2.5, 1.3)| 0.756   |
|         | Lag 13      | 0.0      | (–1.9, 1.7)| 0.958   |
|         | Lag 14      | **–2.6** | **(–7.2, –0.2)**| **0.006**|
| Japan   | Intercept   | 63.0     | (48.9, 77.1)| <0.001  |
|         | Lag 2       | –0.3     | (–12.9, 12.3)| 0.961   |
|         | Lag 3       | 6.0      | (–7.4, 19.4)| 0.372   |
|         | Lag 4       | 6.1      | (–7.7, 19.9)| 0.381   |
|         | Lag 5       | 7.1      | (–6.4, 20.6)| 0.296   |
|         | Lag 6       | 9.7      | (–3.8, 23.2)| 0.155   |
|         | Lag 7       | 4.4      | (–9.1, 17.9)| 0.520   |
|         | Lag 8       | –0.1     | (–13.5, 13.4)| 0.993   |
|         | Lag 9       | –0.7     | (–14.2, 12.9)| 0.919   |
|         | Lag 10      | –5.8     | (–19.4, 7.9)| 0.402   |
|         | Lag 11      | 1.1      | (–12.5, 14.7)| 0.870   |
|         | Lag 12      | **–26.3**| **(–39.9, –12.7)**| **0.000**|
|         | Lag 13      | **–11.3**| **(–24.5, 2.0)**| **0.094**|
|         | Lag 14      | **–16.4**| **(–30.3, –2.6)**| **0.021**|
| Country     | Coefficient | Estimate | 95% CI       | p-value |
|-------------|-------------|----------|--------------|---------|
| Mexico      | Intercept   | 7.9      | (7.2, 8.5)   | <0.001  |
|             | Lag 2       | 0.5      | (–0.6, 1.6)  | 0.353   |
|             | Lag 3       | 0.4      | (–0.9, 1.7)  | 0.555   |
|             | Lag 4       | –0.8     | (–2.1, 0.6)  | 0.249   |
|             | Lag 5       | –0.2     | (–1.5, 1.2)  | 0.807   |
|             | Lag 6       | –0.6     | (–1.9, 0.8)  | 0.408   |
|             | Lag 7       | 0.9      | (–0.4, 2.2)  | 0.188   |
|             | Lag 8       | –0.4     | (–1.6, 0.8)  | 0.512   |
|             | Lag 9       | 0.0      | (–1.3, 1.3)  | 0.965   |
|             | Lag 10      | –0.4     | (–1.7, 1.0)  | 0.579   |
|             | Lag 11      | 0.4      | (–1.0, 1.7)  | 0.612   |
|             | Lag 12      | –0.1     | (–1.5, 1.2)  | 0.851   |
|             | Lag 13      | 0.1      | (–1.3, 1.4)  | 0.921   |
|             | Lag 14      | –1.3     | (–2.4, –0.2) | 0.026   |
| New Zealand | Intercept   | 112.4    | (78.3, 151.8)| <0.001  |
|             | Lag 2       | 2.9      | (–1.9, 22.6) | 0.274   |
|             | Lag 3       | –0.2     | (–19.2, 12.3)| 0.825   |
|             | Lag 4       | 0.0      | (–17.6, 14.9)| 0.934   |
|             | Lag 5       | –0.3     | (–20.4, 12.2)| 0.797   |
|             | Lag 6       | 0.0      | (–17.6, 14.9)| 0.936   |
|             | Lag 7       | 0.2      | (–13.1, 19.9)| 0.836   |
|             | Lag 8       | 2.6      | (–6.0, 31.5) | 0.436   |
|             | Lag 9       | –0.1     | (–19.2, 13.8)| 0.871   |
|             | Lag 10      | 0.0      | (–18.6, 14.6)| 0.904   |
|             | Lag 11      | –0.3     | (–20.9, 13.3)| 0.823   |
|             | Lag 12      | –0.1     | (–19.5, 14.7)| 0.887   |
|             | Lag 13      | –0.5     | (–22.6, 11.0)| 0.723   |
|             | Lag 14      | –7.3     | (–34.7, 0.2) | 0.086   |
| Singapore   | Intercept   | 13.5     | (12.3, 15.8) | <0.001  |
|             | Lag 2       | 1.2      | (–1.1, 1.6)  | 0.131   |
|             | Lag 3       | 1.1      | (–1.3, 1.6)  | 0.564   |
|             | Lag 4       | –1.2     | (–1.7, 1.1)  | 0.228   |
|             | Lag 5       | 1.1      | (–1.3, 1.5)  | 0.650   |
|             | Lag 6       | 1.0      | (–1.5, 1.4)  | 0.898   |
|             | Lag 7       | 1.2      | (–1.2, 1.8)  | 0.250   |
|             | Lag 8       | –1.1     | (–1.5, 1.3)  | 0.675   |
|             | Lag 9       | 1.0      | (–1.4, 1.5)  | 0.849   |
|             | Lag 10      | –1.2     | (–1.8, 1.2)  | 0.365   |
|             | Lag 11      | 1.1      | (–1.3, 1.6)  | 0.506   |
|             | Lag 12      | –1.1     | (–1.6, 1.2)  | 0.437   |
|             | Lag 13      | 1.1      | (–1.3, 1.6)  | 0.536   |
|             | Lag 14      | –1.5     | (–1.9, –1.1) | 0.008   |
| Country   | Coefficient | Estimate | 95% CI       | p-value |
|-----------|-------------|----------|--------------|---------|
| Spain     | Intercept   | 20.1     | (15.0, 26.0) | <0.001  |
|           | Lag 2       | 1.2      | (-1.3, 1.9)  | 0.468   |
|           | Lag 3       | -1.2     | (-2.3, 1.5)  | 0.467   |
|           | Lag 4       | 1.1      | (-1.6, 2.1)  | 0.669   |
|           | Lag 5       | -1.1     | (-2.1, 1.6)  | 0.721   |
|           | Lag 6       | 1.1      | (-1.6, 2.1)  | 0.651   |
|           | Lag 7       | 1.1      | (-1.6, 2.1)  | 0.653   |
|           | Lag 8       | -1.3     | (-2.4, 1.4)  | 0.414   |
|           | Lag 9       | -1.3     | (-2.4, 1.4)  | 0.381   |
|           | Lag 10      | 1.5      | (-1.2, 2.9)  | 0.190   |
|           | Lag 11      | -1.1     | (-2.1, 1.8)  | 0.795   |
|           | Lag 12      | 1.1      | (-1.6, 2.2)  | 0.650   |
|           | Lag 13      | -1.2     | (-2.3, 1.6)  | 0.539   |
|           | Lag 14      | -1.6     | (-2.8, -1.1) | 0.029   |
| Sweden    | Intercept   | 18.0     | (14.5, 21.6) | <0.001  |
|           | Lag 2       | -1.0     | (-4.0, 1.9)  | 0.487   |
|           | Lag 3       | 0.5      | (-2.6, 3.5)  | 0.758   |
|           | Lag 4       | -0.3     | (-3.3, 2.8)  | 0.868   |
|           | Lag 5       | 0.2      | (-3.2, 3.5)  | 0.919   |
|           | Lag 6       | 0.2      | (-3.1, 3.5)  | 0.899   |
|           | Lag 7       | 1.0      | (-2.4, 4.3)  | 0.566   |
|           | Lag 8       | 0.6      | (-2.8, 4.0)  | 0.718   |
|           | Lag 9       | 0.0      | (-3.3, 3.3)  | 1.000   |
|           | Lag 10      | -1.9     | (-5.2, 1.4)  | 0.258   |
|           | Lag 11      | 0.3      | (-3.0, 3.7)  | 0.841   |
|           | Lag 12      | -0.5     | (-3.6, 2.6)  | 0.733   |
|           | Lag 13      | -0.5     | (-3.5, 2.5)  | 0.758   |
|           | Lag 14      | -2.7     | (-5.6, 0.3)  | 0.073   |
| Taiwan    | Intercept   | 47.0     | (29.6, 64.4) | <0.001  |
|           | Lag 2       | 9.6      | (-2.1, 21.3) | 0.105   |
|           | Lag 3       | 2.0      | (-10.6, 14.5) | 0.756   |
|           | Lag 4       | -0.2     | (-12.7, 12.4) | 0.981   |
|           | Lag 5       | 3.7      | (-9.2, 16.5) | 0.569   |
|           | Lag 6       | 0.4      | (-12.4, 13.2) | 0.947   |
|           | Lag 7       | 0.3      | (-12.2, 12.7) | 0.965   |
|           | Lag 8       | 7.0      | (-5.2, 19.2) | 0.258   |
|           | Lag 9       | -0.8     | (-13.3, 11.6) | 0.893   |
|           | Lag 10      | -0.5     | (-13.2, 12.2) | 0.938   |
|           | Lag 11      | 0.8      | (-12.0, 13.6) | 0.900   |
|           | Lag 12      | -5.4     | (-18.0, 7.2) | 0.399   |
|           | Lag 13      | 3.3      | (-9.3, 16.0) | 0.602   |
|           | Lag 14      | 3.3      | (-8.4, 15.0) | 0.572   |
| Country                  | Coefficient | Estimate | 95% CI     | p-value |
|-------------------------|-------------|----------|------------|---------|
| Turkey                  | Intercept   | 4.5      | (3.3, 5.8) | <0.001  |
| Lag 2                   | 0.1         | (–1.2, 1.4) | 0.846     |
| Lag 3                   | 0.2         | (–1.3, 1.6) | 0.832     |
| Lag 4                   | 0.7         | (–0.8, 2.2) | 0.376     |
| Lag 5                   | 0.2         | (–1.4, 1.7) | 0.836     |
| Lag 6                   | 0.6         | (–1.0, 2.1) | 0.464     |
| Lag 7                   | 0.2         | (–1.3, 1.7) | 0.760     |
| Lag 8                   | 0.3         | (–1.1, 1.7) | 0.677     |
| Lag 9                   | –0.5        | (–2.1, 1.1) | 0.537     |
| Lag 10                  | –0.5        | (–2.1, 1.1) | 0.499     |
| Lag 11                  | –0.2        | (–1.8, 1.4) | 0.796     |
| Lag 12                  | –0.4        | (–2.1, 1.2) | 0.600     |
| Lag 13                  | –0.3        | (–1.9, 1.4) | 0.753     |
| **Lag 14**              | **–1.3**    | **(–2.8, 0.1)** | **0.070** |
| United Kingdom          | Intercept   | 18.0     | (14.8, 21.2) | <0.001  |
| Lag 2                   | 3.4         | (–5.1, 11.8) | 0.426     |
| Lag 3                   | 0.9         | (–10.1, 11.9) | 0.868     |
| Lag 4                   | –2.0        | (–13.0, 8.9) | 0.715     |
| Lag 5                   | –3.7        | (–14.3, 7.0) | 0.494     |
| Lag 6                   | –0.5        | (–11.1, 10.2) | 0.931     |
| Lag 7                   | 1.8         | (–8.7, 12.3) | 0.738     |
| Lag 8                   | –0.1        | (–10.7, 10.6) | 0.992     |
| Lag 9                   | 1.3         | (–9.3, 11.9) | 0.803     |
| Lag 10                  | 1.2         | (–9.6, 12.1) | 0.819     |
| Lag 11                  | –0.6        | (–11.8, 10.5) | 0.908     |
| Lag 12                  | 1.2         | (–10.4, 12.7) | 0.841     |
| Lag 13                  | 0.7         | (–11.0, 12.4) | 0.901     |
| **Lag 14**              | **–7.7**    | **(–16.1, 0.7)** | **0.073** |
| United States of America | Intercept   | 10.0     | (8.4, 11.4) | <0.001  |
| Lag 2                   | 1.1         | (–1.2, 1.5) | 0.467     |
| Lag 3                   | 1.0         | (–1.5, 1.4) | 0.895     |
| Lag 4                   | –1.1        | (–1.5, 1.4) | 0.768     |
| Lag 5                   | –1.1        | (–1.7, 1.3) | 0.502     |
| Lag 6                   | 1.0         | (–1.4, 1.5) | 0.921     |
| Lag 7                   | 1.1         | (–1.3, 1.6) | 0.627     |
| Lag 8                   | 1.1         | (–1.3, 1.6) | 0.504     |
| Lag 9                   | 1.1         | (–1.4, 1.6) | 0.734     |
| Lag 10                  | 1.1         | (–1.4, 1.6) | 0.696     |
| Lag 11                  | –1.1        | (–1.6, 1.4) | 0.669     |
| Lag 12                  | –1.1        | (–1.7, 1.3) | 0.573     |
| Lag 13                  | –1.1        | (–1.7, 1.3) | 0.531     |
| **Lag 14**              | **–1.3**    | **(–1.9, 1.0)** | **0.062** |
| Country | Coefficient | Estimate | 95% CI          | p-value |
|---------|-------------|----------|-----------------|---------|
| Vietnam | Intercept   | 56.5     | (47.4, 65.6)    | <0.001  |
|         | Lag 2       | 2.2      | (–16.0, 20.5)   | 0.807   |
|         | Lag 3       | –18.7    | (–46.6, 9.2)    | 0.186   |
|         | Lag 4       | –3.3     | (–32.4, 25.8)   | 0.824   |
|         | Lag 5       | 17.0     | (–12.0, 47.1)   | 0.240   |
|         | Lag 6       | 2.6      | (–27.0, 32.3)   | 0.859   |
|         | Lag 7       | 4.6      | (–24.4, 33.6)   | 0.753   |
|         | Lag 8       | 6.4      | (–21.8, 34.7)   | 0.650   |
|         | Lag 9       | –17.2    | (–46.2, 11.8)   | 0.241   |
|         | Lag 10      | 0.4      | (–29.4, 30.2)   | 0.981   |
|         | Lag 11      | 11.1     | (–18.7, 41.0)   | 0.459   |
|         | Lag 12      | –19.5    | (–49.0, 10.0)   | 0.191   |
|         | Lag 13      | –1.9     | (–30.2, 26.4)   | 0.893   |
|         | Lag 14      | –11.7    | (–30.1, 6.6)    | 0.206   |

Significant lags (p < 0.10) are presented in bold font.