Role of Universal Healthcare Coverage in Building Resilience Against the Public Health Crisis – Case Study of COVID-19 Pandemic and Immunization Coverage

Supplementary material

S1. Dataset used for the analysis

Full dataset used for this analysis can be found here: LINK

Table S1-1. Complete list of countries included in the dataset with their UHC SCI 2019 in alphabetical order

|  |  |
| --- | --- |
| Country name | UHC SCI 2019 |
| Afghanistan | 39.2945 |
| Albania | 69.6255 |
| Algeria | 64.8553 |
| Angola | 39.1577 |
| Antigua and Barbuda | 59.6303 |
| Argentina | 61.1584 |
| Armenia | 62.4351 |
| Australia | 89.4234 |
| Austria | 86.3701 |
| Azerbaijan | 48.1814 |
| Bahamas | 60.5651 |
| Bahrain | 70.5773 |
| Bangladesh | 53.8827 |
| Barbados | 61.2069 |
| Belarus | 70.4622 |
| Belgium | 87.3014 |
| Belize | 54.2797 |
| Benin | 44.6243 |
| Bhutan | 51.3014 |
| Bolivia, Plurinational State of | 52.3988 |
| Bosnia and Herzegovina | 64.1839 |
| Botswana | 57.5176 |
| Brazil | 64.8276 |
| Brunei Darussalam | 65.532 |
| Bulgaria | 62.5567 |
| Burkina Faso | 41.7968 |
| Burundi | 49.94 |
| Cabo Verde | 62.188 |
| Cambodia | 57.0794 |
| Cameroon | 42.29 |
| Canada | 90.3017 |
| Central African Republic | 22.2999 |
| Chad | 31.3724 |
| Chile | 74.3496 |
| China | 69.7123 |
| Colombia | 74.3969 |
| Comoros | 48.1389 |
| Congo | 43.9038 |
| Costa Rica | 79.015 |
| Croatia | 78.9352 |
| Cuba | 72.5922 |
| Cyprus | 79.6022 |
| Czechia | 81.944 |
| Democratic People’s Republic of Korea | 52.8378 |
| Democratic Republic of the Congo | 45.1687 |
| Denmark | 84.1397 |
| Djibouti | 45.2867 |
| Dominican Republic | 52.4998 |
| Ecuador | 64.4544 |
| Egypt | 54.7965 |
| El Salvador | 61.6782 |
| Equatorial Guinea | 49.9937 |
| Eritrea | 42.275 |
| Estonia | 82.0393 |
| Eswatini | 53.3968 |
| Ethiopia | 46.5216 |
| Fiji | 45.1761 |
| Finland | 91.3486 |
| France | 90.7662 |
| Gabon | 53.0498 |
| Gambia | 48.065 |
| Georgia | 55.9534 |
| Germany | 86.2487 |
| Ghana | 49.1393 |
| Greece | 80.1403 |
| Grenada | 50.4838 |
| Guatemala | 52.0988 |
| Guinea | 32.3346 |
| Guinea Bissau | 35.7073 |
| Guyana | 40.6219 |
| Haiti | 35.8119 |
| Honduras | 54.2843 |
| Hungary | 72.0281 |
| Iceland | 95.3069 |
| India | 46.8261 |
| Indonesia | 48.7277 |
| Iran, Islamic Republic of | 69.5146 |
| Iraq | 57.7248 |
| Ireland | 90.3459 |
| Israel | 81.3846 |
| Italy | 88.895 |
| Jamaica | 56.8395 |
| Japan | 96.3409 |
| Jordan | 69.9667 |
| Kazakhstan | 59.2368 |
| Kenya | 51.6469 |
| Kiribati | 35.7356 |
| Kuwait | 81.8333 |
| Kyrgyzstan | 52.9515 |
| Lao People’s Democratic Republic | 43.8545 |
| Latvia | 69.7884 |
| Lebanon | 74.5332 |
| Lesotho | 38.7373 |
| Liberia | 47.5997 |
| Libya | 66.3277 |
| Lithuania | 70.3524 |
| Luxembourg | 91.4552 |
| Madagascar | 39.6908 |
| Malawi | 55.5208 |
| Malaysia | 66.5736 |
| Maldives | 66.8566 |
| Mali | 40.6607 |
| Malta | 82.8809 |
| Mauritania | 53.2779 |
| Mauritius | 55.8094 |
| Mexico | 61.4368 |
| Micronesia, Federated States of | 34.4743 |
| Mongolia | 47.907 |
| Montenegro | 65.9585 |
| Morocco | 58.0323 |
| Mozambique | 44.044 |
| Myanmar | 46.9541 |
| Namibia | 62.169 |
| Nepal | 47.2804 |
| Netherlands | 89.5884 |
| New Zealand | 82.9777 |
| Nicaragua | 57.1586 |
| Niger | 35.0256 |
| Nigeria | 38.339 |
| Norway | 94.2406 |
| Oman | 71.2208 |
| Pakistan | 39.1679 |
| Panama | 71.1553 |
| Papua New Guinea | 37.7673 |
| Paraguay | 63.3513 |
| Peru | 75.7594 |
| Philippines | 54.7117 |
| Poland | 72.6564 |
| Portugal | 83.533 |
| Qatar | 80.4034 |
| Republic of Korea | 89.1617 |
| Republic of Moldova | 62.1936 |
| Romania | 69.5851 |
| Russian Federation | 68.9736 |
| Rwanda | 59.3591 |
| Saint Lucia | 59.1403 |
| Saint Vincent and the Grenadines | 49.4939 |
| Samoa | 49.7959 |
| Sao Tome and Principe | 54.7554 |
| Saudi Arabia | 64.1955 |
| Senegal | 49.6099 |
| Serbia | 63.3494 |
| Seychelles | 61.5172 |
| Sierra Leone | 42.1196 |
| Singapore | 92.4397 |
| Slovakia | 77.9829 |
| Slovenia | 89.834 |
| Solomon Islands | 39.3331 |
| Somalia | 23.9397 |
| South Africa | 59.7274 |
| South Sudan | 41.6941 |
| Spain | 90.0056 |
| Sri Lanka | 65.5627 |
| Sudan | 51.8347 |
| Suriname | 50.1342 |
| Sweden | 90.3608 |
| Switzerland | 93.4984 |
| Syrian Arab Republic | 57.5646 |
| Tajikistan | 47.8775 |
| Thailand | 71.6003 |
| Timor Leste | 45.9543 |
| Togo | 42.8086 |
| Tonga | 52.4167 |
| Trinidad and Tobago | 55.5174 |
| Tunisia | 68.1057 |
| Turkey | 69.2104 |
| Turkmenistan | 44.0134 |
| Uganda | 52.7479 |
| Ukraine | 56.7521 |
| United Arab Emirates | 63.3574 |
| United Republic of Tanzania | 55.2493 |
| United States | 82.1377 |
| Uruguay | 68.5299 |
| Uzbekistan | 42.1848 |
| Vanuatu | 34.0835 |
| Venezuela, Bolivarian Republic of | 60.9675 |
| Viet Nam | 59.7068 |
| Yemen | 49.0458 |
| Zambia | 52.6937 |
| Zimbabwe | 54.4611 |

Diagram

Description automatically generated

Figure S1-1. Change in immunization coverage over time by UHC SCI 2019 category (<50 vs. the rest)

S2. Results from the regression analysis

Table S2-1. Difference-in-difference regression analysis of Bacille Calmette-Guérin (BCG) coverage after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-2. Difference-in-difference regression analysis of the first dose of diphteria and tetanus toxoid and pertussis containing vaccine (DTP1) coverage after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-3. Difference-in-difference regression analysis of the third dose of diphteria and tetanus toxoid and pertussis containing vaccine (DTP3) coverage after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-4. Difference-in-difference regression analysis of the third dose of hepatitis B containing vaccine (HEPB3) coverage after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-5. Difference-in-difference regression analysis of the birth dose of hepatitis B containing vaccine (HEPBB) coverage after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-6. Difference-in-difference regression analysis of the third dose of *Haemophilius influenza* B containing vaccine (HIB3) coverage after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-7. Difference-in-difference regression analysis of the first dose of measles containing vaccine (MCV1) coverage after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-8. Difference-in-difference regression analysis of the second dose of measles containing vaccine (MCV2) after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-9. Difference-in-difference regression analysis of the third dose of pneumococcal conjugate vaccine (PCV3) coverage after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-10. Difference-in-difference regression analysis of the third dose of polio containing vaccine (POL3) coverage after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-11. Difference-in-difference regression analysis of the second or third dose of rotavirus vaccine (ROTAC) coverage after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-12. Difference-in-difference regression analysis of the first dose of rubella containing vaccine (RCV1) coverage after COVID-19 pandemic by UHC SCI 2019 (>=80 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-13. Difference-in-difference regression analysis of overall immunization coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Vaccine type (Reference category: BCG) | | | | | | |
| DTP1 |  |  |  |  |  |  |
| DTP3 |  |  |  |  |  |  |
| HEPB3 |  |  |  |  |  |  |
| HEPBB |  |  |  |  |  |  |
| HIB3 |  |  |  |  |  |  |
| MCV1 |  |  |  |  |  |  |
| MCV2 |  |  |  |  |  |  |
| PCV3 |  |  |  |  |  |  |
| POL3 |  |  |  |  |  |  |
| RCV1 |  |  |  |  |  |  |
| ROTAC |  |  |  |  |  |  |
| Difference-in-difference variables | | | | | | |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-14. Difference-in-difference regression analysis of Bacille Calmette-Guérin (BCG) coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-15. Difference-in-difference regression analysis of the first dose of diphteria and tetanus toxoid and pertussis containing vaccine (DTP1) coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-16. Difference-in-difference regression analysis of the third dose of diphteria and tetanus toxoid and pertussis containing vaccine (DTP3) coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-17. Difference-in-difference regression analysis of the third dose of hepatitis B containing vaccine (HEPB3) coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-18. Difference-in-difference regression analysis of the birth dose of hepatitis B containing vaccine (HEPBB) coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-19. Difference-in-difference regression analysis of the third dose of *Haemophilius influenza* B containing vaccine (HIB3) coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-20. Difference-in-difference regression analysis of the first dose of measles containing vaccine (MCV1) coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-21. Difference-in-difference regression analysis of the second dose of measles containing vaccine (MCV2) after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-22. Difference-in-difference regression analysis of the third dose of pneumococcal conjugate vaccine (PCV3) coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-23. Difference-in-difference regression analysis of the third dose of polio containing vaccine (POL3) coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-24. Difference-in-difference regression analysis of the second or third dose of rotavirus vaccine (ROTAC) coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |

Table S2-25. Difference-in-difference regression analysis of the first dose of rubella containing vaccine (RCV1) coverage after COVID-19 pandemic by UHC SCI 2019 (<50 vs. the rest)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Base model | | | Difference-in-difference model | | |
| Variable | Coefficient | Standard Error | p-value | Coefficient | Standard Error | p-value |
| Intercept |  |  |  |  |  |  |
| Year |  |  |  |  |  |  |
| World Bank Income Group (Reference category: High) | | | | | | |
| Low |  |  |  |  |  |  |
| Lower-middle |  |  |  |  |  |  |
| Upper-middle |  |  |  |  |  |  |
| WHO Region (Reference category: Americas) | | | | | | |
| Europe |  |  |  |  |  |  |
| Western Pacific |  |  |  |  |  |  |
| Eastern Mediterranean |  |  |  |  |  |  |
| Southeast Asia |  |  |  |  |  |  |
| Africa |  |  |  |  |  |  |
| Pre/Post |  |  |  |  |  |  |
| UHC SCI 2019 >=80 |  |  |  |  |  |  |
| Pre/Post \* UHC SCI >=80 |  |  |  |  |  |  |