

Table S1 Incidence rate of pertussis among children in Asian countries and regions from 1990 to 2021

Level	1990		2021		1990–2021	
	Number (95% UI)	Rate per 100,000 (95% UI)	Number (95% UI)	Rate per 100,000 (95% UI)	Rate change	Rate EAPC (95% CI)
Afghanistan	195,644.976 (146,939.166–249,240.010)	4,541.360 (3,410.788–5,785.421)	62,395.270 (28,335.575–117,707.380)	439.384 (199.537–828.888)	–0.903 (–0.955, –0.828)	–3.81 (–4.99, –2.62)
Algeria	122,449.136 (94,717.595–154,615.128)	1,141.755 (883.177–1,441.681)	21,069.835 (9,359.643–40,050.473)	158.400 (70.364–301.093)	–0.861 (–0.935, –0.755)	–0.85 (–2.49, 0.83)
Armenia	10,972.283 (8,490.413–13,871.717)	1,051.784 (813.876–1,329.719)	1,671.410 (497.926–3,693.279)	282.158 (84.057–623.479)	–0.732 (–0.921, –0.442)	–1.71 (–3.35, –0.05)
Azerbaijan	71,517.632 (54,108.855–90,663.988)	2,946.826 (2,221.270–3,735.735)	1,242.954 (271.409–3,037.466)	52.655 (11.498–128.674)	–0.982 (–0.996, –0.959)	–5.56 (–7.35, –3.73)
Bahrain	1,186.305 (917.562–1,511.743)	726.690 (562.067–926.042)	292.166 (128.148–557.752)	98.468 (43.189–187.978)	–0.864 (–0.937, –0.759)	–1.81 (–3.02, –0.59)
Bangladesh	1,616,672.178 (1,219,848.096–2,050,234.339)	3,305.303 (2,493.992–4,191.725)	75,240.630 (35,639.181–136,589.148)	164.403 (77.873–298.451)	–0.950 (–0.976, –0.910)	–6.59 (–7.46, –5.71)
Bhutan	4,452.268 (3,431.303–5,645.084)	1,698.077 (1,308.685–2,153.012)	27.857 (11.695–51.653)	14.884 (6.249–27.597)	–0.991 (–0.996, –0.984)	–13.60 (–14.68, –12.51)
Cambodia	140,647.026 (106,365.327–178,663.916)	3,017.566 (2,282.056–3,833.214)	264.425 (84.886–569.078)	5.168 (1.659–11.122)	–0.998 (–0.999, –0.996)	–8.41 (–11.21, –5.52)
China	3,017,203.310 (2,334,792.769–3,828,797.978)	947.684 (733.344–1,202.601)	126,659.328 (66,672.436–217,991.516)	48.784 (25.680–83.962)	–0.949 (–0.971, –0.919)	–5.02 (–6.32, –3.70)
Democratic People's Republic of Korea	132,774.428 (100,692.276–169,269.672)	2,231.780 (1,692.517–2,845.222)	418.235 (211.230–751.362)	8.761 (4.425–15.740)	–0.996 (–0.998, –0.993)	–12.85 (–15.06, –10.57)
Egypt	360,577.572 (278,336.354–455,671.989)	1,625.561 (1,254.800–2,054.267)	37,757.292 (12,130.596–85,329.216)	102.448 (32.914–231.526)	–0.937 (–0.978, –0.869)	–4.74 (–6.05, –3.42)
Georgia	23,710.347 (18,151.393–30,155.537)	1,732.314 (1,326.169–2,203.210)	75.586 (15.756–254.323)	10.271 (2.141–34.558)	–0.994 (–0.999, –0.981)	–4.47 (–7.27, –1.58)
India	8,289,995.415 (6,276,762.799–10,537,586.053)	2,538.886 (1,922.315–3,227.231)	1,579,005.730 (593,261.099–3,144,338.488)	430.952 (161.917–858.173)	–0.830 (–0.934, –0.686)	–3.97 (–4.89, –3.05)
Indonesia	1,493,118.859 (1,132,801.194–1,900,653.155)	2,204.280 (1,672.346–2,805.920)	30,284.334 (11,139.054–62,448.608)	45.007 (16.554–92.807)	–0.980 (–0.992, –0.960)	–3.37 (–5.51, –1.18)
Iraq	84,695.035 (65,530.029–106,982.144)	1,028.294 (795.609–1,298.884)	42,009.916 (19,002.096–78,873.792)	312.065 (141.155–585.904)	–0.697 (–0.855, –0.461)	–0.42 (–1.41, 0.59)
Islamic Republic of Iran	377,225.058 (290,638.115–478,819.963)	1,486.043 (1,144.941–1,886.266)	32,882.655 (16,026.607–61,811.988)	162.952 (79.421–306.312)	–0.890 (–0.944, –0.807)	–3.02 (–4.96, –1.04)
Jordan	9,548.454 (7,402.101–12,220.452)	584.579 (453.174–748.165)	5,897.309 (1,633.504–13,846.713)	162.324 (44.962–381.133)	–0.722 (–0.924, –0.359)	–0.42 (–2.13, 1.32)
Kazakhstan	120,662.773 (91,843.734–153,537.040)	2,322.121 (1,767.507–2,954.777)	3,574.093 (1,382.221–7,045.773)	65.864 (25.472–129.841)	–0.972 (–0.989, –0.948)	–6.02 (–7.97, –4.04)
Kuwait	3,135.996 (2,420.486–4,015.114)	565.712 (436.639–724.299)	763.228 (334.957–1,458.230)	90.271 (39.617–172.472)	–0.840 (–0.925, –0.719)	–4.29 (–5.77, –2.77)
Kyrgyzstan	19,370.328 (14,982.481–24,474.130)	1,154.661 (893.102–1,458.897)	3,970.188 (1,155.371–9,065.485)	174.561 (50.799–398.590)	–0.849 (–0.954, –0.665)	–2.82 (–3.76, –1.87)
Lao People's Democratic Republic	76,449.270 (57,425.713–97,393.964)	4,147.842 (3,115.697–5,284.220)	5,632.499 (2,379.549–10,933.837)	245.279 (103.622–476.137)	–0.941 (–0.974, –0.892)	–4.45 (–5.74, –3.15)
Lebanon	13,535.221 (10,424.107–17,173.020)	1,294.150 (996.685–1,641.973)	2,810.431 (1,269.147–5,303.618)	219.899 (99.303–414.975)	–0.830 (–0.921, –0.699)	0.82 (–0.76, 2.42)
Libya	17,653.379 (13,660.431–22,309.997)	974.820 (754.330–1,231.959)	2,888.194 (1,305.556–5,430.200)	193.628 (87.526–364.047)	–0.801 (–0.906, –0.653)	–0.71 (–1.89, 0.50)
Malaysia	106,740.838 (82,063.828–135,679.044)	1,623.927 (1,248.498–2,064.186)	13,803.393 (6,205.845–26,244.344)	181.298 (81.510–344.701)	–0.888 (–0.948, –0.793)	–2.63 (–3.55, –1.69)
Maldives	2,046.646 (1,568.626–2,607.067)	1,948.419 (1,493.341–2,481.944)	32.959 (16.160–57.861)	32.903 (16.133–57.764)	–0.983 (–0.991, –0.972)	–4.26 (–6.50, –1.96)
Mauritius	2,607.601 (2,017.650–3,297.876)	790.050 (611.307–999.190)	30.322 (14.803–53.546)	14.620 (7.137–25.817)	–0.981 (–0.990, –0.970)	–6.72 (–8.46, –4.94)
Mongolia	14,214.899 (10,966.775–18,004.368)	1,579.422 (1,218.522–2,000.471)	307.217 (19.424–1,164.727)	28.273 (1.788–107.190)	–0.982 (–0.999, –0.928)	–2.54 (–5.05, 0.03)
Morocco	127,876.534 (98,821.906–161,412.397)	1,306.762 (1,009.855–1,649.463)	10,700.527 (4,693.463–20,428.027)	109.280 (47.932–208.623)	–0.916 (–0.962, –0.850)	–3.97 (–5.22, –2.69)
Myanmar	322,757.528 (244,910.236–411,409.265)	2,184.287 (1,657.449–2,784.244)	9,298.589 (4,508.844–16,271.558)	59.550 (28.876–104.206)	–0.973 (–0.986, –0.956)	–2.36 (–4.47, –0.21)
Nepal	269,840.512 (203,849.855–342,532.156)	3,202.786 (2,419.531–4,065.576)	28,422.375 (11,328.326–54,894.669)	308.027 (122.771–594.921)	–0.904 (–0.959, –0.813)	–5.92 (–6.94, –4.90)
Oman	7,541.970 (5,831.974–9,579.909)	897.455 (693.974–1,139.958)	381.823 (134.650–774.954)	31.220 (11.010–63.364)	–0.965 (–0.988, –0.933)	–5.12 (–6.67, –3.55)
Pakistan	1,204,284.573 (910,543.721–1,531,435.949)	2,445.643 (1,849.119–3,110.017)	348,406.847 (211,115.048–529,816.568)	407.770 (247.086–620.089)	–0.833 (–0.895, –0.752)	–3.23 (–4.02, –2.44)
Palestine	11,453.176 (8,865.165–14,465.613)	1,182.828 (915.551–1,493.937)	612.646 (265.953–1,182.252)	32.812 (14.244–63.318)	–0.972 (–0.987, –0.949)	–8.33 (–9.65, –7.00)
Philippines	455,302.752 (349,079.634–579,728.257)	1,805.729 (1,384.449–2,299.200)	52,80.848 (22,298.931–98,346.797)	153.774 (65.588–289.268)	–0.915 (–0.960, –0.846)	–2.47 (–3.87, –1.06)
Qatar	1,994.346 (1,540.565–2,517.135)	1,594.924 (1,232.025–2,013.010)	59.824 (20.039–126.637)	12.113 (4.057–25.640)	–0.992 (–0.997, –0.984)	–6.55 (–8.67, –4.39)
Saudi Arabia	54,380.280 (42,083.416–68,956.067)	829.805 (642.164–1,052.221)	7,683.016 (3,367.467–14,651.974)	101.556 (44.512–193.674)	–0.878 (–0.944, –0.781)	–2.53 (–3.53, –1.53)
Seychelles	120.620 (93.517–154.453)	508.354 (394.128–650.943)	2.718 (1.327–4.845)	11.613 (5.668–20.701)	–0.977 (–0.988, –0.962)	–2.76 (–4.87, –0.60)
Socialist Republic of Viet Nam	446,832.467 (343,453.032–568,120.890)	1,685.368 (1,295.440–2,142.845)	11,048.293 (3,073.891–25,527.954)	44.617 (12.413–103.091)	–0.974 (–0.992, –0.941)	–2.53 (–4.67, –0.34)
Sri Lanka	17,070.989 (13,010.009–22,124.260)	308.528 (235.133–399.857)	232.798 (49.068–710.070)	4.561 (0.961–13.912)	–0.985 (–0.997, –0.958)	–0.19 (–3.32, 3.04)
Sudan	298,673.420 (224,708.748–379,180.355)	3,358.735 (2,526.964–4,264.076)	53,140.871 (24,057.566–99,620.986)	320.333 (145.019–600.514)	–0.905 (–0.956, –0.831)	–3.82 (–4.84, –2.78)
Syrian Arab Republic	68,379.377 (52,816.390–86,292.659)	1,154.647 (891.852–1,457.129)	11,026.560 (5,005.212–20,790.906)	300.999 (136.631–567.543)	–0.739 (–0.876, –0.535)	1.31 (–0.17, 2.81)
Taiwan (Province of China)	35,068.643 (27,118.749–44,544.274)	636.671 (492.341–808.701)	1,083.218 (566.426–1,855.660)	36.760 (19.222–62.973)	–0.942 (–0.967, –0.909)	–5.51 (–6.52, –4.48)
Tajikistan	37,764.231 (29,167.016–47,678.328)	1,626.335 (1,256.092–2,053.290)	2,678.441 (1,238.207–4,813.750)	74.726 (34.545–134.299)	–0.954 (–0.977, –0.921)	–4.26 (–5.78, –2.72)
Thailand	161,435.902 (124,910.774–203,929.198)	957.590 (740.933–1,209.647)	611.498 (99.262–1,724.129)	6.261 (1.016–17.654)	–0.993 (–0.999, –0.982)	–3.20 (–6.08, –0.22)
Timor-Leste	13,569.667 (10,206.015–17,242.569)	4,079.502 (3,068.274–5,183.700)	395.535 (191.354–688.190)	75.971 (36.754–132.182)	–0.981 (–0.990, –0.970)	–5.83 (–7.66, –3.98)
Tunisia	31,054.612 (24,030.561–39,230.881)	999.993 (773.811–1,263.279)	2,243.657 (986.891–4,285.935)	81.124 (35.683–154.966)	–0.919 (–0.963, –0.855)	–3.52 (–4.98, –2.04)
Turkey	226,213.703 (174,880.018–285,576.598)	1,104.090 (853.544–1,393.825)	18,408.242 (8,061.025–35,077.366)	99.394 (43.525–189.398)	–0.910 (–0.959, –0.839)	–5.24 (–6.78, –3.67)
Turkmenistan	23,276.403 (17,958.145–29,446.983)	1,550.868 (1,196.522–1,962.004)	99.692 (43.838–183.886)	6.541 (2.876–12.066)	–0.996 (–0.998, –0.993)	–10.96 (–12.68, –9.22)
United Arab Emirates	5,187.736 (4,014.939–6,584.928)	880.189 (681.203–1,117.246)	1,258.458 (551.978–2,402.443)	93.999 (41.229–179.447)	–0.893 (–0.951, –0.810)	–3.07 (–4.19, –1.93)
Uzbekistan	16,139.317 (11,984.271–21,467.835)	188.640 (140.075–250.920)	5,772.339 (2,666.728–10,399.752)	57.202 (26.427–103.059)	–0.697 (–0.858, –0.474)	0.40 (–1.58, 2.41)
Yemen	232,560.394 (175,143.641–294,959.378)	3,278.102 (2,468.772–4,157.659)	53,947.593 (24,496.248–101,757.352)	391.249 (177.657–737.985)	–0.881 (–0.944, –0.788)	–2.53 (–3.64, –1.41)

CI, confidence interval; EAPC, estimated annual percentage change; UI, uncertainty interval.

Table S2 Mortality rate of pertussis among children in Asian countries and regions from 1990 to 2021

Level	1990		2021		1990–2021	
	Number (95% UI)	Rate per 100,000 (95% UI)	Number (95% UI)	Rate per 100,000 (95% UI)	Rate change	Rate EAPC (95% CI)
Afghanistan	2,535.372 (260.075–7,629.913)	58.852 (6.037–177.107)	713.162 (65.055–2,238.316)	5.022 (0.458–15.762)	–0.915 (–0.993, 0.058)	–4.41 (–5.57, –3.23)
Algeria	819.838 (87.876–2,537.340)	7.644 (0.819–23.659)	65.218 (6.019–219.268)	0.490 (0.045–1.648)	–0.936 (–0.996, –0.316)	–3.66 (–5.02, –2.29)
Armenia	0.015 (0.004–0.032)	0.001 (0.000–0.003)	0.002 (0.000–0.006)	0.000 (0.000–0.001)	–0.781 (–0.960, –0.206)	–5.81 (–9.73, –1.73)
Azerbaijan	396.444 (33.997–1,200.929)	16.335 (1.401–49.483)	6.563 (0.524–20.931)	0.278 (0.022–0.887)	–0.983 (–0.999, –0.798)	–6.96 (–8.49, –5.40)
Bahrain	5.634 (0.657–16.982)	3.451 (0.402–10.403)	0.559 (0.032–1.959)	0.188 (0.011–0.660)	–0.945 (–0.997, –0.435)	–5.98 (–6.84, –5.13)
Bangladesh	17,451.255 (1,787.683–55,465.683)	35.679 (3.655–113.400)	483.229 (54.001–1,435.108)	1.056 (0.118–3.136)	–0.970 (–0.997, –0.636)	–8.58 (–9.30, –7.85)
Bhutan	40.934 (3.411–140.473)	15.612 (1.301–53.576)	0.103 (0.003–0.514)	0.055 (0.002–0.274)	–0.996 (–1.000, –0.936)	–13.96 (–15.44, –12.45)
Brunei Darussalam	3.002 (0.263–8.744)	3.314 (0.291–9.654)	0.018 (0.000–0.080)	0.019 (0.000–0.085)	–0.994 (–1.000, –0.922)	–6.83 (–8.97, –4.64)
Cambodia	1,466.346 (124.613–4,590.230)	31.460 (2.674–98.483)	5.760 (0.039–25.015)	0.113 (0.001–0.489)	–0.996 (–1.000, –0.961)	–9.06 (–11.18, –6.89)
China	21,881.285 (1,726.939–66,044.283)	6.873 (0.542–20.744)	1,011.252 (107.288–2,774.715)	0.389 (0.041–1.069)	–0.943 (–0.995, –0.304)	–9.11 (–9.80, –8.41)
Democratic People's Republic of Korea	969.364 (96.889–2,693.813)	16.294 (1.629–45.280)	1.347 (0.079–5.041)	0.028 (0.002–0.106)	–0.998 (–1.000, –0.984)	–14.65 (–16.97, –12.27)
Egypt	2,501.530 (212.587–7,866.301)	11.277 (0.958–35.463)	117.768 (3.607–453.789)	0.320 (0.010–1.231)	–0.972 (–0.999, –0.708)	–7.12 (–8.32, –5.91)
Georgia	0.435 (0.149–0.955)	0.032 (0.011–0.070)	0.002 (0.000–0.007)	0.000 (0.000–0.001)	–0.992 (–0.999, –0.965)	–10.50 (–12.32, –8.63)
India	72,362.645 (5,578.906–246,801.292)	22.162 (1,709–75.585)	8,268.076 (589.652–25,964.571)	2.257 (0.161–7.086)	–0.898 (–0.994, –0.027)	–5.52 (–6.46, –4.58)
Indonesia	11,145.408 (1,128.364–30,853.472)	16.454 (1.666–45.549)	274.648 (26.486–845.755)	0.408 (0.039–1.257)	–0.975 (–0.997, –0.778)	–4.41 (–6.20, –2.59)
Iran (Islamic Republic of)	2,360.598 (233.281–6,634.480)	9.299 (0.919–26.136)	64.714 (6.624–204.805)	0.321 (0.033–1.015)	–0.966 (–0.997, –0.762)	–6.41 (–8.08, –4.71)
Iraq	497.257 (47.939–1,473.423)	6.037 (0.582–17.889)	72.730 (3.353–275.826)	0.540 (0.025–2.049)	–0.911 (–0.997, –0.140)	–4.07 (–5.44, –2.69)
Japan	2.883 (2.114–3.535)	0.012 (0.009–0.015)	0.018 (0.003–0.042)	0.000 (0.000–0.000)	–0.991 (–0.998, –0.979)	–7.54 (–9.80, –5.21)
Jordan	48.150 (4.596–134.834)	2.948 (0.281–8.255)	14.330 (1.148–49.919)	0.394 (0.032–1.374)	–0.866 (–0.989, 0.422)	–3.75 (–5.42, –2.05)
Kazakhstan	0.090 (0.029–0.183)	0.002 (0.001–0.004)	0.003 (0.000–0.009)	0.000 (0.000–0.000)	–0.972 (–0.996, –0.895)	–14.01 (–16.20, –11.77)
Kuwait	0.002 (0.001–0.004)	0.000 (0.000–0.001)	0.000 (0.000–0.001)	0.000 (0.000–0.000)	–0.935 (–0.984, –0.809)	–5.38 (–7.60, –3.11)
Kyrgyzstan	1.996 (0.811–3.547)	0.119 (0.048–0.211)	0.001 (0.000–0.002)	0.000 (0.000–0.000)	–1.000 (–1.000, –0.999)	–21.46 (–23.19, –19.69)
Lao People's Democratic Republic	796.256 (68.144–2,550.447)	43.202 (3.697–138.377)	39.004 (3.689–126.345)	1.699 (0.161–5.502)	–0.961 (–0.997, –0.549)	–5.19 (–6.45, –3.92)
Lebanon	59.057 (5.150–169.227)	5.647 (0.492–16.180)	7.370 (0.658–23.307)	0.577 (0.052–1.824)	–0.898 (–0.991, 0.107)	–2.37 (–3.59, –1.13)
Libya	83.088 (10.127–232.313)	4.588 (0.559–12.828)	8.687 (0.720–29.298)	0.582 (0.048–1.964)	–0.873 (–0.990, 0.095)	–2.42 (–3.45, –1.38)
Malaysia	516.822 (54.499–1,376.429)	7.863 (0.829–20.941)	35.543 (2.160–131.019)	0.467 (0.028–1.721)	–0.941 (–0.997, –0.403)	–4.54 (–5.49, –3.59)
Maldives	12.720 (1.178–42.065)	12.109 (1.121–40.046)	0.099 (0.006–0.410)	0.099 (0.006–0.409)	–0.992 (–1.000, –0.895)	–7.00 (–9.17, –4.79)
Mauritius	0.001 (0.000–0.001)	0.000 (0.000–0.000)	0.000 (0.000–0.000)	0.000 (0.000–0.000)	–0.997 (–1.000, –0.992)	–17.27 (–19.41, –15.08)
Mongolia	151.864 (14.290–500.298)	16.874 (1.588–55.588)	6.574 (0.713–18.138)	0.605 (0.066–1.669)	–0.964 (–0.997, –0.596)	–4.67 (–6.18, –3.13)
Morocco	1,042.284 (107.401–3,104.642)	10.651 (1.098–31.726)	48.260 (2.858–159.551)	0.493 (0.029–1.629)	–0.954 (–0.998, –0.443)	–5.66 (–6.81, –4.49)
Myanmar	4,101.827 (379.082–13,075.822)	27.759 (2.565–88.492)	95.972 (4.625–370.960)	0.615 (0.030–2.376)	–0.978 (–0.999, –0.774)	–4.35 (–6.18, –2.48)
Nepal	2,737.279 (263.135–8,252.567)	32.489 (3.123–97.951)	158.282 (13.433–525.678)	1.715 (0.146–5.697)	–0.947 (–0.996, –0.279)	–7.24 (–8.17, –6.30)
Oman	33.137 (3.849–105.765)	3.943 (0.458–12.585)	0.675 (0.053–2.348)	0.055 (0.004–0.192)	–0.986 (–0.999, –0.795)	–7.76 (–9.38, –6.10)
Pakistan	12,681.406 (1,288.407–36,952.669)	25.753 (2.616–75.043)	2,797.280 (273.322–9,097.603)	3.274 (0.320–10.648)	–0.873 (–0.986, 0.759)	–3.19 (–4.35, –2.02)
Palestine	60.271 (6.607–167.321)	6.224 (0.682–17.280)	1.710 (0.134–5.631)	0.092 (0.007–0.302)	–0.985 (–0.999, –0.880)	–9.91 (–11.30, –8.50)
Philippines	2,787.474 (278.938–8,196.732)	11.055 (1.106–32.508)	251.014 (23.162–1,103.101)	0.738 (0.068–3.245)	–0.933 (–0.995, –0.357)	–3.02 (–4.51, –1.51)
Qatar	6.831 (0.792–18.844)	5.463 (0.633–15.070)	0.338 (0.035–1.077)	0.068 (0.007–0.218)	–0.987 (–0.999, –0.825)	–8.88 (–10.10, –7.65)
Republic of Korea	414.471 (46.513–1,226.311)	3.645 (0.409–10.785)	0.195 (0.000–1.173)	0.003 (0.000–0.019)	–0.999 (–1.000, –0.988)	–11.87 (–14.20, –9.48)
Saudi Arabia	354.137 (39.309–1,049.785)	5.404 (0.600–16.019)	16.787 (1.249–60.592)	0.222 (0.017–0.801)	–0.959 (–0.997, –0.632)	–6.96 (–7.69, –6.22)
Seychelles	0.506 (0.052–1.448)	2.132 (0.219–6.103)	0.020 (0.002–0.063)	0.084 (0.007–0.270)	–0.961 (–0.997, –0.497)	–3.33 (–4.85, –1.78)
Singapore	0.003 (0.001–0.005)	0.000 (0.000–0.001)	0.000 (0.000–0.000)	0.000 (0.000–0.000)	–0.995 (–0.999, –0.987)	–6.93 (–10.71, –3.00)
Sri Lanka	86.402 (8.080–265.013)	1.562 (0.146–4.790)	1.693 (0.014–9.171)	0.033 (0.000–0.180)	–0.979 (–1.000, –0.731)	–2.26 (–4.63, 0.17)
Sudan	3,149.448 (326.291–10,042.529)	35.417 (3.669–112.933)	324.851 (21.552–1,024.464)	1.958 (0.130–6.175)	–0.945 (–0.995, –0.318)	–5.69 (–6.71, –4.65)
Syrian Arab Republic	438.033 (55.476–1,314.922)	7.397 (0.937–22.204)	34.714 (3.311–87.263)	0.948 (0.090–2.382)	–0.872 (–0.988, –0.012)	–1.95 (–3.20, –0.69)
Taiwan (Province of China)	0.001 (0.000–0.001)	0.000 (0.000–0.000)	0.001 (0.000–0.003)	0.000 (0.000–0.000)	0.915 (–0.603, 4.292)	13.04 (9.42, 16.77)
Tajikistan	262.952 (18.271–832.896)	11.324 (0.787–35.869)	17.712 (0.735–71.276)	0.494 (0.021–1.989)	–0.956 (–0.998, –0.515)	–4.53 (–5.98, –3.06)
Thailand	745.981 (69.522–2,210.638)	4.425 (0.412–13.113)	4.049 (0.224–14.236)	0.041 (0.002–0.146)	–0.991 (–0.999, –0.893)	–5.48 (–7.58, –3.33)
Timor-Leste	118.359 (9.334–355.267)	35.583 (2.806–106.805)	5.324 (0.462–18.604)	1.023 (0.089–3.573)	–0.971 (–0.997, –0.626)	–6.03 (–7.47, –4.56)
Tunisia	183.649 (15.262–560.914)	5.914 (0.491–18.062)	3.464 (0.313–12.461)	0.125 (0.011–0.451)	–0.979 (–0.998, –0.689)	–7.20 (–8.58, –5.80)
Türkiye	1,657.414 (225.229–5,038.361)	8.089 (1.099–24.591)	38.401 (3.629–118.510)	0.207 (0.020–0.640)	–0.974 (–0.998, –0.723)	–10.20 (–11.68, –8.70)
Turkmenistan	0.104 (0.055–0.172)	0.007 (0.004–0.011)	0.008 (0.001–0.024)	0.001 (0.000–0.002)	–0.926 (–0.986, –0.787)	–6.56 (–8.53, –4.54)
United Arab Emirates	28.308 (2.981–86.673)	4.803 (0.506–14.706)	4.049 (0.416–12.332)	0.302 (0.031–0.921)	–0.937 (–0.994, –0.175)	–5.35 (–6.35, –4.33)
Uzbekistan	4.066 (1.636–6.893)	0.048 (0.019–0.081)	0.007 (0.002–0.018)	0.000 (0.000–0.000)	–0.998 (–1.000, –0.996)	–18.09 (–20.32, –15.80)
Viet Nam	2,388.417 (297.093–7,017.421)	9.009 (1.121–26.468)	43.601 (3.229–150.540)	0.176 (0.013–0.608)	–0.980 (–0.999, –0.804)	–4.56 (–6.44, –2.64)
Yemen	1,708.745 (155.450–5,346.333)	24.086 (2.191–75.360)	389.217 (36.666–1,216.594)	2.823 (0.266–8.823)	–0.883 (–0.988, 0.153)	–3.50 (–4.39, –2.59)

CI, confidence interval; EAPC, estimated annual percentage change; UI, uncertainty interval.

Table S3 DALY rate of pertussis in male children in Asian countries and regions from 1990 to 2021

Level	1990		2021		1990–2021	
	Number (95% UI)	Rate per 100,000 (95% UI)	Number (95% UI)	Rate per 100,000 (95% UI)	Rate change	Rate EAPC (95% CI)
Afghanistan	224,221.231 (24,002.001–672,067.923)	5,204.679 (557.140–15,600.208)	62,846.848 (5,935.057–196,669.370)	442.564 (41.794–1,384.934)	–0.915 (–0.993, 0.004)	–4.42 (–5.58, –3.24)
Algeria	72,648.078 (8,365.404–224,224.179)	677.394 (78.002–2,090.738)	5,837.513 (694.840–19,340.580)	43.885 (5.224–145.399)	–0.935 (–0.994, –0.363)	–3.60 (–4.97, –2.22)
Armenia	76.195 (46.256–118.312)	7.304 (4.434–11.341)	11.519 (3.280–25.986)	1.945 (0.554–4.387)	–0.734 (–0.925, –0.424)	–1.83 (–3.49, –0.13)
Azerbaijan	35,250.250 (3,458.504–105,749.329)	1,452.458 (142.505–4,357.315)	578.986 (58.334–1,821.870)	24.527 (2.471–77.179)	–0.983 (–0.999, –0.835)	–6.93 (–8.46, –5.36)
Bahrain	502.241 (66.195–1,497.630)	307.656 (40.549–917.398)	50.559 (4.381–174.428)	17.040 (1.476–58.787)	–0.945 (–0.995, –0.493)	–5.87 (–6.74, –5.00)
Bangladesh	1,540,874.976 (166,743.471–4,873,745.681)	3,150.335 (340.909–9,964.423)	42,627.617 (5,031.845–126,181.266)	93.143 (10.995–275.710)	–0.970 (–0.997, –0.657)	–8.57 (–9.29, –7.84)
Bhutan	3,624.027 (332.377–12,345.502)	1,382.189 (126.767–4,708.525)	9.090 (0.355–44.936)	4.857 (0.189–24.008)	–0.996 (–1.000, –0.939)	–13.96 (–15.44, –12.46)
Cambodia	129,461.405 (11,900.976–403,162.909)	2,777.580 (255.334–8,649.814)	505.510 (5.022–2,206.640)	9.880 (0.098–43.127)	–0.996 (–1.000, –0.963)	–9.05 (–11.17, –6.88)
China	1,934,328.138 (176,443.729–5,793,601.932)	607.560 (55.420–1,819.734)	89,020.557 (9,994.187–242,781.180)	34.287 (3.849–93.510)	–0.944 (–0.994, –0.383)	–9.00 (–9.69, –8.31)
Democratic People's Republic of Korea	85,864.349 (9,386.081–237,145.645)	1,443.278 (157.769–3,986.136)	120.790 (9.394–446.506)	2.530 (0.197–9.353)	–0.998 (–1.000, –0.984)	–14.64 (–16.94, –12.26)
Egypt	221,534.503 (20,074.749–691,886.222)	998.725 (90.501–3,119.171)	10,517.199 (493.744–40,260.142)	28.537 (1.340–109.239)	–0.971 (–0.999, –0.719)	–7.08 (–8.28, –5.87)
Georgia	201.121 (128.151–296.200)	14.694 (9.363–21.641)	0.689 (0.160–1.949)	0.094 (0.022–0.265)	–0.994 (–0.998, –0.983)	–4.67 (–7.28, –1.98)
India	6,389,583.013 (547,789.906–21,633,038.964)	1,956.868 (167.766–6,625.314)	732,289.734 (59,624.737–2,291,023.071)	199.861 (16.273–625.281)	–0.898 (–0.994, –0.076)	–5.51 (–6.44, –4.56)
Indonesia	982,975.173 (109,974.062–2,704,102.339)	1,451.159 (162.354–3,992.046)	24,133.367 (2,468.491–74,068.559)	35.866 (3.669–110.076)	–0.975 (–0.997, –0.806)	–4.39 (–6.19, –2.57)
Iraq	44,057.467 (4,715.963–129,485.060)	534.908 (57.257–1,572.095)	6,693.899 (542.160–24,702.551)	49.725 (4.027–183.500)	–0.907 (–0.994, –0.162)	–4.00 (–5.35, –2.64)
Islamic Republic of Iran	209,158.470 (23,548.550–583,784.287)	823.960 (92.767–2,299.763)	5,855.276 (704.422–18,367.058)	29.016 (3.491–91.019)	–0.965 (–0.996, –0.769)	–6.33 (–8.01, –4.62)
Jordan	4,284.951 (466.218–11,900.147)	262.335 (28.543–728.555)	1,294.086 (133.105–4,473.606)	35.620 (3.664–123.137)	–0.864 (–0.987, 0.319)	–3.68 (–5.35, –1.98)
Kazakhstan	828.903 (491.907–1,276.150)	15.952 (9.467–24.559)	24.908 (8.523–52.125)	0.459 (0.157–0.961)	–0.971 (–0.989, –0.945)	–6.20 (–8.09, –4.28)
Kuwait	21.705 (12.454–34.718)	3.915 (2.247–6.263)	5.247 (1.979–10.933)	0.621 (0.234–1.293)	–0.842 (–0.927, –0.703)	–4.29 (–5.79, –2.78)
Kyrgyzstan	310.614 (188.640–476.614)	18.516 (11.245–28.411)	27.413 (7.272–68.026)	1.205 (0.320–2.991)	–0.935 (–0.983, –0.840)	–4.68 (–5.75, –3.60)
Lao People's Democratic Republic	70,301.537 (6,433.681–224,580.499)	3,814.290 (349.067–12,184.871)	3,485.415 (352.617–11,244.491)	151.780 (15.355–489.665)	–0.960 (–0.997, –0.559)	–5.18 (–6.43, –3.91)
Lebanon	5,280.438 (552.486–14,971.821)	504.881 (52.825–1,431.508)	672.312 (78.036–2,082.093)	52.604 (6.106–162.911)	–0.896 (–0.989, –0.002)	–2.27 (–3.50, –1.02)
Libya	7,393.176 (1,010.807–20,442.103)	408.252 (55.817–1,128.814)	773.783 (78.641–2,563.713)	51.875 (5.272–171.874)	–0.873 (–0.988, 0.000)	–2.39 (–3.42, –1.35)
Malaysia	46,016.368 (5,490.969–121,727.139)	700.081 (83.538–1,851.925)	3,202.470 (254.111–11,554.415)	42.062 (3.338–151.759)	–0.940 (–0.995, –0.444)	–4.51 (–5.46, –3.55)
Maldives	1,124.573 (113.240–3,694.402)	1,070.600 (107.805–3,517.094)	8.730 (0.677–36.107)	8.715 (0.676–36.046)	–0.992 (–1.000, –0.903)	–6.94 (–9.11, –4.72)
Mauritius	17.853 (10.784–28.198)	5.409 (3.267–8.543)	0.210 (0.084–0.428)	0.101 (0.040–0.206)	–0.981 (–0.991, –0.968)	–6.72 (–8.46, –4.96)
Mongolia	13,419.726 (1,366.842–44,028.636)	1,491.070 (151.870–4,892.035)	585.989 (65.248–1,615.291)	53.928 (6.005–148.655)	–0.964 (–0.997, –0.607)	–4.62 (–6.14, –3.08)
Morocco	92,237.934 (10,084.476–272,897.392)	942.574 (103.053–2,788.721)	4,276.627 (313.642–14,062.741)	43.675 (3.203–143.617)	–0.954 (–0.997, –0.489)	–5.65 (–6.80, –4.48)
Myanmar	361,143.865 (35,504.606–1,147,679.999)	2,444.069 (240.280–7,767.014)	8,543.887 (468.580–32,941.824)	54.717 (3.001–210.966)	–0.978 (–0.999, –0.785)	–4.33 (–6.15, –2.46)
Nepal	242,080.901 (24,858.071–726,065.425)	2,873.302 (295.045–8,617.802)	14,056.325 (1,292.946–46,260.112)	152.335 (14.012–501.344)	–0.947 (–0.996, –0.322)	–7.24 (–8.17, –6.29)
Oman	2,962.788 (384.311–9,360.417)	352.556 (45.731–1,113.840)	61.636 (6.595–210.046)	5.040 (0.539–17.174)	–0.986 (–0.999, –0.810)	–7.68 (–9.31, –6.03)
Pakistan	1,121,763.032 (120,114.186–3,253,890.763)	2,278.060 (243.926–6,607.953)	247,169.099 (25,955.828–801,120.797)	289.283 (30.378–937.619)	–0.873 (–0.986, 0.568)	–3.19 (–4.35, –2.02)
Palestine	5,364.585 (652.686–14,757.961)	554.028 (67.406–1,524.130)	153.685 (15.509–499.478)	8.231 (0.831–26.751)	–0.985 (–0.999, –0.884)	–9.89 (–11.27, –8.48)
Philippines	247,014.417 (27,265.047–720,550.626)	979.658 (108.133–2,857.701)	22,346.208 (2,310.328–97,217.784)	65.727 (6.795–285.947)	–0.933 (–0.994, –0.394)	–3.02 (–4.50, –1.51)
Qatar	614.449 (82.573–1,671.654)	491.389 (66.035–1,336.860)	30.450 (3.441–95.958)	6.165 (0.697–19.429)	–0.987 (–0.999, –0.852)	–8.78 (–10.02, –7.53)
Saudi Arabia	31,411.620 (3,950.556–92,525.000)	479.319 (60.283–1,411.867)	1,514.612 (139.108–5,351.649)	20.021 (1.839–70.740)	–0.958 (–0.996, –0.647)	–6.86 (–7.60, –6.12)
Seychelles	45.096 (5.129–127.694)	190.057 (21.616–538.167)	1.733 (0.154–5.548)	7.403 (0.656–23.705)	–0.961 (–0.997, –0.539)	–3.30 (–4.84, –1.75)
Socialist Republic of Viet Nam	212,840.190 (29,196.994–620,108.945)	802.793 (110.126–2,338.934)	3,867.182 (316.453–13,234.990)	15.617 (1.278–53.447)	–0.981 (–0.999, –0.810)	–4.52 (–6.41, –2.60)
Sri Lanka	7,645.492 (807.589–23,166.601)	138.179 (14.596–418.695)	149.520 (2.487–799.713)	2.929 (0.049–15.668)	–0.979 (–1.000, –0.763)	–2.21 (–4.60, 0.24)
Sudan	278,291.959 (30,111.084–882,816.000)	3,129.535 (338.614–9,927.715)	28,925.118 (2,133.870–90,503.672)	174.360 (12.863–545.555)	–0.944 (–0.994, –0.372)	–5.68 (–6.70, –4.65)
Syrian Arab Republic	38,845.249 (5,267.727–115,472.286)	655.937 (88.950–1,949.853)	3,054.229 (340.539–7,584.167)	83.373 (9.296–207.030)	–0.873 (–0.987, –0.070)	–1.92 (–3.18, –0.65)
Taiwan (Province of China)	241.785 (145.232–386.418)	4.390 (2.637–7.015)	7.508 (3.335–14.633)	0.255 (0.113–0.497)	–0.942 (–0.968, –0.905)	–5.41 (–6.44, –4.37)
Tajikistan	23,357.809 (1,838.885–73,477.849)	1,005.915 (79.192–3,164.359)	1,569.925 (81.998–6,295.288)	43.799 (2.288–175.632)	–0.956 (–0.998, –0.541)	–4.52 (–5.98, –3.04)
Thailand	66,272.164 (7,245.192–194,306.848)	393.107 (42.976–1,152.570)	354.210 (22.916–1,231.709)	3.627 (0.235–12.612)	–0.991 (–0.999, –0.896)	–5.43 (–7.56, –3.26)
Timor-Leste	10,477.172 (911.417–31,301.041)	3,149.793 (274.003–9,410.153)	476.259 (42.506–1,664.089)	91.476 (8.164–319.624)	–0.971 (–0.997, –0.656)	–6.02 (–7.46, –4.56)
Tunisia	16,293.014 (1,522.871–49,380.604)	524.653 (49.038–1,590.111)	321.433 (40.638–1,117.303)	11.622 (1.469–40.398)	–0.978 (–0.997, –0.701)	–7.11 (–8.48, –5.71)
Turkey	146,787.537 (21,014.787–444,216.110)	716.432 (102.568–2,168.103)	3,451.908 (412.724–10,444.651)	18.638 (2.228–56.395)	–0.974 (–0.997, –0.734)	–10.10 (–11.58, –8.60)
Turkmenistan	167.405 (105.086–260.233)	11.154 (7.002–17.339)	1.390 (0.519–3.086)	0.091 (0.034–0.202)	–0.992 (–0.997, –0.981)	–10.18 (–11.54, –8.81)
United Arab Emirates	2,516.706 (296.752–7,625.824)	427.002 (50.349–1,293.852)	367.594 (45.948–1,104.715)	27.457 (3.432–82.515)	–0.936 (–0.993, –0.240)	–5.29 (–6.29, –4.28)
Uzbekistan	473.418 (241.176–736.545)	5.533 (2.819–8.609)	40.370 (16.028–78.635)	0.400 (0.159–0.779)	–0.928 (–0.973, –0.841)	–2.42 (–4.08, –0.74)
Yemen	151,627.303 (15,045.349–470,810.085)	2,137.293 (212.075–6,636.398)	34,594.099 (3,614.282–107,372.425)	250.890 (26.212–778.708)	–0.883 (–0.988, 0.060)	–3.49 (–4.38, –2.58)

CI, confidence interval; EAPC, estimated annual percentage change; UI, uncertainty interval.