

**Estimating global and regional between-country inequality in routine
childhood vaccine coverage in 195 countries and territories from 2019 to 2021:
a longitudinal study**

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Webappendix list

- **Webappendix table 1:** Global coverage rate for 11 routine childhood vaccines from 2010 to 2021
- **Webappendix table 2:** Coverage rate for 11 routine childhood vaccines from 2019 to 2021 by WHO regions
- **Webappendix table 3:** Global slope index of inequality and relative index of inequality for 11 routine childhood vaccine coverage from 2019 to 2021 for all countries and territories with available data
- **Webappendix table 4:** Global slope index of inequality and relative index of inequality for 11 routine childhood vaccine coverage in 2019 using GBD data
- **Webappendix table 5:** Global slope index of inequality and relative index of inequality for 11 routine childhood vaccine coverage from 2019 to 2021 under different grouping strategies
- **Webappendix table 6:** Slope index of inequality and relative index of inequality for 11 routine childhood vaccine coverage from 2019 to 2021 by WHO regions
- **Webappendix table 7:** Bonferroni-adjusted results of Jonckheere-Terpstra test and Willcoxon-Mann-Whitney rank sum test by region, combining values of 11 vaccines
- **Webappendix table 8:** Changes in DTP3 coverage rate from 2019 to 2021 in 195 countries and territories
- **Webappendix table 9:** Number of DTP3 unvaccinated children in 2021 in 195 countries and territories

Webappendix table 1: Global coverage rate for 11 routine childhood vaccines from 2010 to 2021

Vaccine type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
BCG	89.60% (85.4, 93.8)	89.90% (85.4, 94.4)	89.80% (84.9, 94.6)	89.20% (84.2, 94.3)	88.90% (83.9, 94.0)	87.90% (82.9, 93.0)	89.20% (85.0, 93.3)	89.70% (85.9, 93.6)	89.80% (86.0, 93.6)	88.80% (84.8, 92.7)	85.80% (81.5, 90.2)	84.40% (80.0, 88.8)
DTP1	88.90% (84.4, 93.4)	90.00% (85.7, 94.2)	89.60% (85.0, 94.2)	89.30% (84.5, 94.2)	89.70% (84.8, 94.5)	89.60% (84.8, 94.4)	90.20% (86.3, 94.1)	90.60% (86.9, 94.2)	90.50% (86.9, 94.1)	90.50% (86.8, 94.1)	87.90% (84.4, 91.4)	86.40% (82.5, 90.3)
DTP3	83.70% (77.5, 89.8)	84.70% (79.0, 90.4)	84.40% (78.4, 90.5)	84.10% (78.0, 90.2)	84.80% (78.9, 90.7)	85.00% (79.0, 91.0)	86.10% (81.0, 91.2)	86.10% (81.1, 91.1)	86.30% (81.2, 91.4)	86.20% (81.2, 91.3)	83.20% (78.2, 88.2)	81.40% (76.1, 86.7)
Pol3	83.40% (77.0, 89.9)	83.80% (77.8, 89.8)	83.90% (77.7, 90.2)	84.10% (78.0, 90.3)	84.70% (78.6, 90.7)	85.30% (79.5, 91.1)	85.30% (80.1, 90.4)	85.70% (80.6, 90.8)	85.90% (80.7, 91.1)	86.30% (81.4, 91.3)	82.70% (77.5, 87.9)	80.90% (75.3, 86.4)
RCV1	83.20% (69.7, 96.8)	91.10% (87.5, 94.6)	89.60% (81.5, 97.7)	92.80% (90.2, 95.4)	93.70% (90.7, 96.6)	92.20% (89.9, 94.4)	93.30% (90.0, 96.6)	69.00% (38.0, 100.1)	89.80% (84.1, 95.4)	91.50% (88.1, 94.8)	88.60% (84.9, 92.3)	86.90% (82.5, 91.4)
MCV1	84.10% (78.6, 89.7)	84.50% (78.8, 90.2)	84.10% (78.1, 90.1)	84.20% (78.2, 90.2)	84.60% (78.6, 90.5)	84.90% (78.8, 90.9)	85.10% (79.4, 90.8)	85.50% (80.1, 90.9)	86.30% (80.7, 91.9)	86.10% (80.4, 91.9)	83.70% (78.5, 88.9)	81.70% (75.9, 87.5)
MCV2	79.30% (65.8, 92.8)	67.60% (42.9, 92.2)	68.20% (48.5, 87.9)	73.80% (59.2, 88.4)	73.70% (61.7, 85.8)	76.10% (66.4, 85.7)	79.60% (72.3, 86.9)	81.10% (74.7, 87.6)	82.70% (76.6, 88.7)	76.20% (65.9, 86.5)	76.70% (68.6, 84.8)	75.80% (67.5, 84.1)
HepB3	74.70%	76.30%	81.90%	81.10%	83.30%	84.30%	85.50%	85.50%	85.60%	85.60%	83.00%	81.20%

	(58.5, 90.8)	(62.0, 90.6)	(74.6, 89.1)	(73.3, 88.8)	(76.9, 89.7)	(78.2, 90.5)	(80.2, 90.7)	(80.3, 90.7)	(80.2, 90.9)	(80.4, 90.9)	(78.0, 88.0)	(75.8, 86.6)
Hib3	78.40%	81.10%	77.80%	62.00%	65.60%	73.60%	82.10%	83.70%	83.80%	84.00%	80.70%	78.90%
	(70.5, 86.4)	(74.7, 87.5)	(66.4, 89.2)	(41.8, 82.2)	(45.3, 85.9)	(60.9, 86.3)	(77.9, 86.2)	(79.2, 88.3)	(79.1, 88.5)	(79.2, 88.8)	(76.7, 84.8)	(74.3, 83.6)
PCV3	70.70%	65.90%	73.70%	73.90%	74.50%	72.00%	75.10%	78.20%	59.30%	61.90%	61.60%	60.90%
	(51.4, 90.0)	(47.9, 83.9)	(60.9, 86.6)	(65.4, 82.5)	(67.3, 81.7)	(62.9, 81.1)	(68.1, 82.0)	(71.9, 84.5)	(34.9, 83.7)	(40.5, 83.4)	(43.0, 80.3)	(44.3, 77.5)
RotaC	69.50%	76.20%	65.30%	73.40%	64.40%	70.40%	50.60%	50.10%	61.10%	66.80%	76.20%	76.50%
	(57.0, 82.0)	(64.4, 88.0)	(48.6, 82.1)	(62.8, 84.0)	(52.8, 76.0)	(60.7, 80.1)	(15.8, 85.4)	(24.5, 75.7)	(44.4, 77.7)	(56.1, 77.5)	(70.0, 82.3)	(71.2, 81.8)

Data source: WHO-UNICEF Estimates of National Immunization Coverage (WUENIC): 2021 revision

Notes: BCG, Bacillus Calmette-Guérin vaccine; DTP, diphtheria-tetanus-pertussis vaccine; Pol, Polio vaccine; RCV, rubella-containing vaccine; MCV, measles-containing vaccine; HepB, Hepatitis B vaccine; Hib, Haemophilus influenzae type b vaccine; PCV, pneumococcal conjugate vaccine, RotaC, completed rotavirus vaccine.

Webappendix table 2: Coverage rate for 11 routine childhood vaccines from 2019 to 2021 by WHO regions

Vaccine type	The African Region				The Region of the Americas				The Eastern Mediterranean Region			
	N	2019	2020	2021	N	2019	2020	2021	N	2019	2020	2021
BCG	47	81.6% (76.1, 87.1)	81.3% (76.8, 85.8)	78.2% (73.4, 83.1)	27	83.5% (78.8, 88.3)	68.3% (50.8, 85.9)	80.6% (67.3, 93.9)	20	88.9% (82.0, 95.8)	89.4% (83.8, 95.0)	88.5% (81.8, 95.2)
DTP1	47	82.3% (75.7, 88.9)	81.1% (75.7, 86.4)	79.9% (74.2, 85.5)	35	89.1% (82.7, 95.5)	88.2% (82.1, 94.4)	86.1% (78.0, 94.1)	22	89.9% (85.1, 94.7)	86.9% (81.4, 92.5)	88.8% (83.7, 93.9)
DTP3	47	74.7% (66.2, 83.3)	73.0% (65.3, 80.8)	71.3% (63.7, 78.9)	35	83.7% (75.2, 92.2)	80.7% (72.8, 88.7)	80.1% (71.0, 89.2)	22	85.5% (79.4, 91.5)	81.3% (74.1, 88.6)	82.8% (76.1, 89.4)
Pol3	47	74.3% (65.3, 83.3)	71.0% (63.0, 79.0)	69.9% (61.9, 77.9)	35	86.1% (81.3, 90.9)	79.8% (71.9, 87.7)	78.8% (69.8, 87.9)	22	85.7% (79.9, 91.6)	83.9% (77.8, 89.9)	83.1% (76.8, 89.4)
RCV1	29	81.5% (74.5, 88.5)	79.0% (71.4, 86.6)	77.4% (68.8, 86.1)	35	87.3% (82.4, 92.2)	85.3% (80.5, 90.2)	84.3% (76.7, 91.8)	17	90.4% (82.8, 98.0)	90.2% (82.7, 97.7)	89.6% (81.7, 97.6)
MCV1	47	70.5% (63.1, 78.0)	69.6% (63.1, 76.1)	67.9% (60.8, 74.9)	35	87.3% (82.4, 92.2)	85.3% (80.5, 90.2)	84.3% (76.7, 91.8)	22	83.6% (76.8, 90.4)	83.0% (76.7, 89.3)	81.9% (75.0, 88.8)
MCV2	32	45.7% (23.7, 67.7)	54.0% (42.5, 65.5)	54.8% (42.7, 66.8)	35	72.3% (55.7, 88.8)	72.0% (53.9, 90.1)	75.1% (57.1, 93.1)	21	78.2% (68.1, 88.3)	78.9% (69.2, 88.7)	79.1% (69.4, 88.7)
HepB3	47	74.6%	72.9%	71.2%	35	79.3%	80.7%	79.6%	22	85.5%	81.3%	82.7%

Hib3	47	(66.1, 83.2)	(65.1, 80.7)	(63.5, 78.8)	35	(69.2, 89.5)	(74.0, 87.3)	(71.3, 87.9)	22	(79.4, 91.5)	(74.1, 88.6)	(76.1, 89.4)
		74.6%	72.8%	71.2%		83.1%	79.9%	79.2%		85.5%	81.3%	82.8%
		(66.1, 83.2)	(65.1, 80.6)	(63.5, 78.8)		(76.3, 89.9)	(73.1, 86.7)	(71.3, 87.2)		(79.5, 91.5)	(74.1, 88.6)	(76.1, 89.4)
PCV3	40	73.2%	71.4%	69.3%	25	83.0%	76.8%	74.7%	16	79.6%	75.2%	74.8%
			(63.3, 83.1)	(62.4, 80.4)		(60.3, 78.3)		(74.5, 91.6)		(70.1, 83.5)	(66.9, 82.4)	
RotaC	36	69.0%	70.6%	71.6%	21	75.9%	72.8%	71.8%	15	77.1%	79.3%	79.3%
			(49.8, 88.2)	(57.1, 84.1)		(63.3, 79.9)		(68.2, 83.6)		(66.5, 79.2)	(65.4, 78.2)	
Vaccine type	The European Region				The South-East Asian Region				The Western Pacific Region			
	N	2019	2020	2021	N	2019	2020	2021	N	2019	2020	2021
BCG	28	92.9%	93.5%	93.0%	11	92.6%	87.2%	84.7%	24	95.2%	94.0%	90.7%
			(88.7, 97.2)	(89.8, 97.2)		(89.0, 97.0)		(90.8, 94.5)		(82.8, 91.7)	(80.5, 89.0)	
DTP1	53	97.5%	96.9%	96.7%	11	94.1%	88.0%	85.8%	27	95.5%	95.2%	92.0%
			(96.7, 98.3)	(96.0, 97.8)		(95.8, 97.6)		(92.4, 95.7)		(84.8, 91.3)	(79.3, 92.3)	
DTP3	53	95.1%	93.8%	93.9%	11	91.1%	85.5%	82.4%	27	94.5%	94.4%	91.3%
			(93.4, 96.9)	(91.9, 95.8)		(92.1, 95.6)		(88.7, 93.5)		(81.7, 89.4)	(74.6, 90.3)	
Pol3	53	94.8%	94.2%	94.1%	11	90.4%	85.1%	82.3%	27	95.3%	93.6%	91.1%
			(92.9, 96.8)	(92.4, 96.0)		(92.3, 95.8)		(88.0, 92.8)		(81.2, 89.1)	(74.5, 90.1)	

RCV1	53	95.7% (94.4, 97.0)	93.7% (91.8, 95.7)	94.1% (92.3, 96.0)	10	93.9% (91.2, 96.7)	88.2% (83.6, 92.8)	86.4% (79.1, 93.7)	27	94.9% (87.5, 100.0)	94.6% (86.4, 100.0)	91.7% (78.3, 100.0)
MCV1	53	95.7% (94.4, 97.0)	93.7% (91.8, 95.7)	94.1% (92.3, 96.0)	11	94.0% (91.3, 96.6)	88.3% (83.9, 92.7)	85.9% (78.3, 93.5)	27	95.1% (87.9, 100.0)	94.6% (86.4, 100.0)	91.7% (78.3, 100.0)
MCV2	52	92.3% (89.7, 94.8)	91.6% (89.2, 93.9)	92.0% (89.7, 94.2)	11	83.1% (78.6, 87.7)	79.8% (72.7, 86.9)	77.5% (65.4, 89.5)	26	92.8% (83.5, 100.0)	93.1% (82.7, 100.0)	90.1% (74.7, 100.0)
HepB3	48	93.9% (91.5, 96.3)	92.9% (90.6, 95.2)	93.0% (90.7, 95.2)	11	91.1% (88.7, 93.5)	85.5% (81.7, 89.4)	82.4% (74.6, 90.3)	27	94.6% (86.2, 100.0)	94.3% (85.5, 100.0)	91.1% (77.1, 100.0)
Hib3	52	94.5% (92.4, 96.5)	93.4% (91.5, 95.4)	93.4% (91.9, 94.9)	10	90.9% (88.5, 93.4)	85.3% (81.4, 89.2)	82.1% (73.8, 90.5)	26	83.6% (72.4, 94.8)	84.2% (72.3, 96.1)	76.0% (59.8, 92.2)
PCV3	40	89.9% (85.7, 94.1)	89.1% (85.8, 92.4)	90.3% (86.8, 93.8)	6	24.2% (-4.4, 52.9)	28.7% (2.3, 55.2)	30.1% (6.1, 54.1)	17	70.4% (47.9, 93.0)	77.0% (61.9, 92.0)	68.7% (45.6, 91.9)
RotaC	21	67.2% (53.4, 81.0)	78.5% (68.1, 88.9)	77.5% (69.0, 86.0)	1	53.0% -	82.0% -	83.0% -	8	91.1% (88.1, 94.0)	92.1% (89.4, 94.7)	93.8% (90.9, 96.8)

Data source: WHO-UNICEF Estimates of National Immunization Coverage (WUENIC): 2021 revision

Notes: BCG, Bacillus Calmette-Guérin vaccine; DTP, diphtheria-tetanus-pertussis vaccine; Pol, Polio vaccine; RCV, rubella-containing vaccine; MCV, measles-containing vaccine; HepB, Hepatitis B vaccine; Hib, Haemophilus influenzae type b vaccine; PCV, pneumococcal conjugate vaccine, RotaC, completed rotavirus vaccine.

Webappendix table 3: Global slope index of inequality and relative index of inequality for 11 routine childhood vaccine coverage from 2019 to 2021 for all countries and territories with available data

Vaccine type	Slope index of inequality (SII)*			Relative index of inequality (RII)		
	2019	2020	2021	2019	2020	2021
BCG (n=149, 149, 149)	8.3 (-2.7, 19.3)	11.3 (1.0, 21.5)	16.1 (5.5, 26.7)	1.10 (0.96, 1.23)	1.14 (1.01, 1.27)	1.21 (1.06, 1.35)
DTP1 (n=187, 187, 187)	14.8 (9.8, 19.8)	18.5 (13.9, 23.1)	20.8 (15.2, 26.4)	1.17 (1.11, 1.24)	1.23 (1.16, 1.29)	1.26 (1.18, 1.34)
DTP3 (n=187, 187, 187)	20.1 (13.7, 26.5)	23.6 (17.5, 29.7)	26.9 (20.0, 33.8)	1.25 (1.16, 1.35)	1.32 (1.22, 1.41)	1.37 (1.25, 1.49)
Pol3 (n=187, 187, 187)	21.0 (14.7, 27.4)	24.3 (18.3, 30.4)	28.5 (21.3, 35.8)	1.27 (1.17, 1.36)	1.33 (1.23, 1.43)	1.40 (1.27, 1.53)
RCV1 (n=165, 167, 167)	13.6 (8.3, 18.8)	16.6 (11.2, 21.9)	20.5 (14.1, 27.0)	1.16 (1.09, 1.23)	1.21 (1.13, 1.28)	1.27 (1.17, 1.37)
MCV1 (n=187, 187, 187)	23.7 (17.1, 30.4)	25.5 (19.1, 32.0)	30.0 (23.0, 37.0)	1.31 (1.21, 1.42)	1.35 (1.24, 1.46)	1.43 (1.30, 1.57)
MCV2 (n=170, 172, 176)	33.9 (23.9, 43.9)	36.5 (27.3, 45.7)	38.9 (28.0, 49.7)	1.52 (1.31, 1.73)	1.59 (1.38, 1.80)	1.67 (1.41, 1.94)
HepB3 (n=182, 182, 183)	18.6 (12.0, 25.3)	21.6 (15.3, 28.0)	24.7 (17.5, 31.9)	1.24 (1.14, 1.33)	1.29 (1.19, 1.39)	1.34 (1.22, 1.46)
Hib3 (n=184, 185, 185)	18.5 (11.3, 25.7)	19.7 (12.5, 27.0)	23.7 (16.1, 31.2)	1.23 (1.13, 1.34)	1.26 (1.15, 1.37)	1.32 (1.20, 1.45)
PCV3 (n=141, 143, 149)	17.2 (8.9, 25.5)	20.1 (12.0, 28.1)	24.8 (15.9, 33.7)	1.23 (1.10, 1.36)	1.28 (1.15, 1.41)	1.37 (1.20, 1.53)
RotaC (n=98, 105, 113)	1.3 (-13.4, 15.9)	4.8 (-7.1, 16.8)	6.0 (-5.0, 17.1)	1.02 (0.83, 1.20)	1.06 (0.90, 1.23)	1.08 (0.93, 1.24)

Data source: WHO-UNICEF Estimates of National Immunization Coverage (WUENIC): 2021 revision

Notes: * SII is measured in percentage points. BCG, Bacillus Calmette-Guérin vaccine; DTP, diphtheria-tetanus-pertussis vaccine; Pol, Polio vaccine; RCV, rubella-containing vaccine; MCV,

measles-containing vaccine; HepB, Hepatitis B vaccine; Hib, Haemophilus influenzae type b vaccine; PCV, pneumococcal conjugate vaccine, RotaC, completed rotavirus vaccine.

Webappendix table 4: Global slope index of inequality and relative index of inequality for 11 routine childhood vaccine coverage in 2019 using GBD data

Vaccine type	Slope index of inequality (SII)*	Relative index of inequality (RII)
BCG (n=149)	11.4 (5.2, 17.6)	1.14 (1.06, 1.22)
DTP1 (n=187)	17.9 (15.0, 20.9)	1.22 (1.18, 1.26)
DTP3 (n=187)	23.5 (19.8, 27.3)	1.31 (1.25, 1.37)
Pol3 (n=187)	24.7 (20.9, 28.5)	1.33 (1.27, 1.40)
RCV1 (n=165)	17.3 (14.0, 20.6)	1.22 (1.17, 1.27)
MCV1 (n=187)	26.5 (22.7, 30.4)	1.37 (1.30, 1.43)
MCV2 (n=170)	33.5 (28.1, 38.9)	1.52 (1.41, 1.64)
HepB3 (n=182)	21.7 (17.9, 25.6)	1.29 (1.23, 1.35)
Hib3 (n=184)	21.1 (16.8, 25.3)	1.28 (1.21, 1.34)
PCV3 (n=141)	19.6 (14.9, 24.4)	1.27 (1.19, 1.35)
RotaC (n=98)	4.8 (-2.5, 12.2)	1.06 (0.96, 1.16)

Data source: Global Burden of Disease Study 2020, Release 1 (GBD 2020 R1) Routine Childhood Vaccination Coverage 1980-2019

Notes: * SII is measured in percentage points. BCG, Bacillus Calmette-Guérin vaccine; DTP,

diphtheria-tetanus-pertussis vaccine; Pol, Polio vaccine; RCV, rubella-containing vaccine; MCV, measles-containing vaccine; HepB, Hepatitis B vaccine; Hib, Haemophilus influenzae type b vaccine; PCV, pneumococcal conjugate vaccine, RotaC, completed rotavirus vaccine.

Webappendix table 5: Global slope index of inequality and relative index of inequality for 11 routine childhood vaccine coverage from 2019 to 2021 under different grouping strategies

Vaccine type	Slope index of inequality (SII)*			Relative index of inequality (RII)		
	2019	2020	2021	2019	2020	2021
Grouping strategy 1: 4 quartiles						
BCG (n=149)	6.5 (-3.8, 16.8)	9.6 (-0.7, 19.8)	15.2 (4.7, 25.6)	1.08 (0.95, 1.20)	1.12 (0.99, 1.24)	1.19 (1.05, 1.34)
DTP1 (n=187)	14.6 (9.6, 19.5)	18.3 (13.6, 23.0)	19.6 (13.8, 25.5)	1.17 (1.11, 1.23)	1.22 (1.16, 1.29)	1.24 (1.16, 1.33)
DTP3 (n=187)	20.2 (13.7, 26.6)	24.3 (18.1, 30.5)	25 (17.7, 32.3)	1.26 (1.16, 1.35)	1.33 (1.23, 1.43)	1.34 (1.22, 1.46)
Pol3 (n=187)	21.2 (14.8, 27.7)	25.3 (19.2, 31.4)	26.6 (18.8, 34.3)	1.27 (1.18, 1.37)	1.34 (1.24, 1.45)	1.37 (1.24, 1.50)
RCV1 (n=165)	14.9 (9.3, 20.5)	17.4 (11.8, 23.1)	21.4 (14.7, 28.2)	1.18 (1.10, 1.25)	1.22 (1.14, 1.30)	1.28 (1.18, 1.39)
MCV1 (n=187)	24 (17.4, 30.7)	26.7 (20.1, 33.3)	27.4 (19.4, 35.4)	1.32 (1.21, 1.42)	1.37 (1.26, 1.49)	1.39 (1.25, 1.53)
MCV2 (n=170)	33.2 (23.2, 43.2)	34.9 (26.0, 43.7)	32.5 (22.9, 42.0)	1.51 (1.30, 1.71)	1.55 (1.36, 1.74)	1.52 (1.32, 1.71)
HepB3 (n=182)	18.9 (12.2, 25.6)	22.5 (16.1, 28.9)	22.3 (14.7, 30.0)	1.24 (1.14, 1.34)	1.3 (1.20, 1.40)	1.3 (1.18, 1.43)
Hib3 (n=184)	19.2 (11.2, 27.1)	21.3 (13.4, 29.1)	24.5 (16.0, 33.0)	1.24 (1.13, 1.36)	1.28 (1.16, 1.40)	1.34 (1.20, 1.48)
PCV3 (n=141)	17.9 (8.1, 27.6)	16.6 (6.9, 26.3)	22.5 (11.9, 33.1)	1.24 (1.09, 1.39)	1.23 (1.08, 1.37)	1.32 (1.14, 1.50)

RotaC (n=98)	0.7 (-15.5, 16.8)	-0.8 (-14.0, 12.4)	5.5 (-7.3, 18.3)	1.01 (0.80, 1.21)	0.99 (0.82, 1.16)	1.08 (0.90, 1.25)
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Grouping strategy 2: 10 deciles

BCG (n=149)	9 (-1.8, 19.8)	11.3 (0.9, 21.7)	16.1 (4.9, 27.2)	1.11 (0.97, 1.24)	1.14 (1.00, 1.27)	1.2 (1.05, 1.36)
DTP1 (n=187)	14.8 (9.8, 19.7)	18.3 (13.6, 22.9)	20 (14.5, 25.5)	1.17 (1.11, 1.24)	1.22 (1.16, 1.29)	1.25 (1.17, 1.33)
DTP3 (n=187)	19.9 (13.6, 26.2)	23.3 (17.3, 29.4)	25.9 (19.2, 32.6)	1.25 (1.16, 1.34)	1.31 (1.21, 1.41)	1.36 (1.24, 1.47)
Pol3 (n=187)	21 (14.8, 27.3)	24.1 (18.1, 30.1)	27.5 (20.5, 34.5)	1.27 (1.17, 1.36)	1.33 (1.23, 1.42)	1.39 (1.26, 1.51)
RCV1 (n=165)	13.3 (8.1, 18.5)	16.5 (11.3, 21.6)	20.3 (14.2, 26.5)	1.16 (1.09, 1.23)	1.21 (1.13, 1.28)	1.27 (1.17, 1.36)
MCV1 (n=187)	23.1 (16.6, 29.7)	24.9 (18.4, 31.3)	28.7 (21.9, 35.6)	1.3 (1.20, 1.41)	1.34 (1.23, 1.45)	1.41 (1.29, 1.54)
MCV2 (n=170)	34.5 (24.5, 44.5)	34.3 (26.0, 42.6)	31.7 (22.2, 41.1)	1.53 (1.32, 1.74)	1.54 (1.36, 1.72)	1.5 (1.31, 1.69)
HepB3 (n=182)	18 (11.4, 24.6)	21.2 (14.9, 27.5)	24 (17.0, 31.0)	1.23 (1.13, 1.32)	1.28 (1.18, 1.38)	1.33 (1.21, 1.45)
Hib3 (n=184)	19.7 (13.3, 26.1)	21.8 (15.7, 27.9)	25 (18.3, 31.7)	1.25 (1.16, 1.34)	1.29 (1.19, 1.39)	1.34 (1.23, 1.46)
PCV3 (n=141)	16.6 (8.9, 24.3)	18.9 (11.7, 26.0)	23.4 (15.4, 31.4)	1.22 (1.10, 1.34)	1.26 (1.15, 1.38)	1.34 (1.20, 1.48)
RotaC (n=98)	3.5 (-10.3, 17.3)	4.1 (-7.5, 15.8)	7.6 (-4.3, 19.5)	1.05 (0.86, 1.23)	1.05 (0.90, 1.21)	1.1 (0.93, 1.28)

Grouping strategy 3: 4 income groups

BCG (n=149)	9.8 (-0.9, 20.4)	11.5 (1.3, 21.8)	17 (6.2, 27.8)	1.12 (0.98, 1.25)	1.14 (1.01, 1.27)	1.22 (1.07, 1.37)
DTP1	15.8	18.2	21.7	1.19	1.22	1.28

(n=187)	(10.7, 20.8)	(13.4, 23.1)	(16.0, 27.5)	(1.12, 1.25)	(1.16, 1.29)	(1.19, 1.36)
DTP3	21.5	23.4	27.6	1.28	1.32	1.39
(n=187)	(15.2, 27.7)	(17.2, 29.5)	(20.9, 34.3)	(1.18, 1.37)	(1.22, 1.42)	(1.27, 1.51)
Pol3	22.1	24.6	30.3	1.29	1.34	1.44
(n=187)	(16.0, 28.2)	(18.7, 30.5)	(22.4, 38.2)	(1.19, 1.38)	(1.24, 1.44)	(1.29, 1.59)
RCV1	14.2	17.2	20.6	1.17	1.22	1.27
(n=165)	(9.1, 19.2)	(11.9, 22.5)	(14.5, 26.8)	(1.10, 1.24)	(1.14, 1.30)	(1.18, 1.37)
MCV1	23.1	25.1	29.8	1.3	1.35	1.44
(n=187)	(16.7, 29.4)	(18.9, 31.4)	(23.2, 36.4)	(1.20, 1.41)	(1.24, 1.46)	(1.31, 1.56)
MCV2	35.3	33.8	33.1	1.55	1.54	1.54
(n=170)	(25.6, 45.0)	(25.7, 41.9)	(24.2, 42.1)	(1.34, 1.76)	(1.36, 1.71)	(1.34, 1.73)
HepB3	19.8	21.5	25.7	1.26	1.29	1.36
(n=182)	(13.3, 26.3)	(15.1, 27.8)	(18.8, 32.6)	(1.16, 1.35)	(1.19, 1.39)	(1.24, 1.48)
Hib3	21.4	23.5	27.2	1.28	1.32	1.39
(n=184)	(15.1, 27.8)	(17.3, 29.7)	(20.4, 34.0)	(1.18, 1.38)	(1.22, 1.42)	(1.26, 1.51)
PCV3	20.7	20.3	24.1	1.29	1.29	1.35
(n=141)	(11.8, 29.7)	(12.0, 28.6)	(15.2, 33.1)	(1.14, 1.44)	(1.15, 1.42)	(1.19, 1.52)
RotaC	3.1	5	8.4	1.04	1.07	1.12
(n=98)	(-11.0, 17.3)	(-7.2, 17.1)	(-3.4, 20.3)	(0.85, 1.23)	(0.90, 1.23)	(0.94, 1.29)

Data source: WHO-UNICEF Estimates of National Immunization Coverage (WUENIC): 2021 revision

Notes: * SII is measured in percentage points. BCG, Bacillus Calmette-Guérin vaccine; DTP, diphtheria-tetanus-pertussis vaccine; Pol, Polio vaccine; RCV, rubella-containing vaccine; MCV, measles-containing vaccine; HepB, Hepatitis B vaccine; Hib, Haemophilus influenzae type b vaccine; PCV, pneumococcal conjugate vaccine, RotaC, completed rotavirus vaccine.

Webappendix table 6: Slope index of inequality and relative index of inequality for 11 routine childhood vaccine coverage from 2019 to 2021 by WHO regions

Vaccine type	Slope index of inequality (SII)*			Relative index of inequality (RII)		
	2019	2020	2021	2019	2020	2021
The African Region						
BCG (n=45)	15.7 (4.6, 26.9)	16.3 (5.7, 26.9)	23.4 (7.7, 39.1)	1.20 (1.04, 1.35)	1.21 (1.06, 1.36)	1.32 (1.07, 1.58)
DTP1 (n=45)	6.1 (-6.4, 18.7)	7.1 (-5.7, 19.9)	10.8 (-4.0, 25.5)	1.07 (0.92, 1.23)	1.09 (0.92, 1.25)	1.14 (0.94, 1.33)
DTP3 (n=45)	8.1 (-9.0, 25.2)	10.4 (-6.3, 27.1)	13.8 (-4.8, 32.5)	1.11 (0.87, 1.34)	1.14 (0.90, 1.38)	1.19 (0.91, 1.48)
Pol3 (n=45)	8.9 (-8.1, 25.8)	10.2 (-6.3, 26.8)	13.3 (-6.8, 33.5)	1.12 (0.88, 1.35)	1.14 (0.90, 1.39)	1.19 (0.87, 1.51)
RCV1 (n=28)	-3.1 (-18.6, 12.4)	-1.6 (-15.0, 11.9)	0.1 (-14.1, 14.3)	0.96 (0.79, 1.14)	0.98 (0.82, 1.14)	1.00 (0.83, 1.18)
MCV1 (n=45)	8.7 (-10.0, 27.5)	10.2 (-7.8, 28.1)	10.7 (-9.9, 31.3)	1.12 (0.85, 1.39)	1.15 (0.87, 1.42)	1.16 (0.83, 1.48)
MCV2 (n=31)	20.1 (-13.8, 53.9)	17.6 (-6.4, 41.7)	4.9 (-20.0, 29.8)	1.37 (0.63, 2.12)	1.31 (0.81, 1.81)	1.08 (0.67, 1.49)
HepB3 (n=45)	8.1 (-9.1, 25.3)	10.6 (-6.2, 27.3)	13.5 (-5.5, 32.6)	1.11 (0.87, 1.34)	1.14 (0.90, 1.39)	1.19 (0.90, 1.48)
Hib3 (n=45)	8.1 (-9.1, 25.3)	10.6 (-6.2, 27.3)	13.5 (-5.5, 32.6)	1.11 (0.87, 1.34)	1.14 (0.90, 1.39)	1.19 (0.90, 1.48)
PCV3 (n=39)	3.9 (-14.9, 22.7)	12.5 (-3.9, 28.9)	10.5 (-11.4, 32.4)	1.05 (0.80, 1.29)	1.17 (0.92, 1.42)	1.15 (0.82, 1.47)
RotaC (n=35)	11.0 (-17.5, 39.4)	6.0 (-17.1, 29.1)	0.4 (-25.4, 26.2)	1.15 (0.74, 1.56)	1.08 (0.76, 1.40)	1.01 (0.66, 1.35)
The Region of the Americas						
BCG (n=26)	13.7 (2.8, 24.5)	14.4 (-0.3, 29.2)	20.3 (9.5, 31.0)	1.16 (1.02, 1.30)	1.18 (0.98, 1.38)	1.26 (1.10, 1.42)

DTP1 (n=34)	10.1 (1.8, 18.5)	17.9 (5.9, 29.8)	14.9 (5.3, 24.6)	1.12 (1.01, 1.22)	1.22 (1.05, 1.39)	1.19 (1.06, 1.32)
DTP3 (n=34)	11.0 (-1.4, 23.5)	23.1 (7.4, 38.9)	17.6 (4.5, 30.7)	1.13 (0.97, 1.30)	1.32 (1.06, 1.58)	1.24 (1.04, 1.44)
Pol3 (n=34)	13.2 (0.3, 26.0)	24.4 (9.0, 39.9)	20.9 (7.0, 34.9)	1.16 (0.99, 1.33)	1.35 (1.08, 1.61)	1.30 (1.07, 1.52)
RCV1 (n=34)	11.7 (0.4, 22.9)	18.2 (4.2, 32.3)	18.9 (8.0, 29.9)	1.14 (0.99, 1.29)	1.24 (1.03, 1.45)	1.26 (1.09, 1.43)
MCV1 (n=34)	11.7 (0.4, 22.9)	18.2 (4.2, 32.3)	18.9 (8.0, 29.9)	1.14 (0.99, 1.29)	1.24 (1.03, 1.45)	1.26 (1.09, 1.43)
MCV2 (n=34)	21.7 (-0.2, 43.6)	31.8 (8.7, 54.9)	24.6 (7.0, 42.2)	1.31 (0.93, 1.69)	1.52 (1.01, 2.03)	1.39 (1.05, 1.73)
HepB3 (n=34)	10.4 (-2.5, 23.2)	21.7 (6.1, 37.3)	16.7 (3.7, 29.7)	1.13 (0.96, 1.29)	1.30 (1.05, 1.55)	1.23 (1.03, 1.42)
Hib3 (n=34)	12.0 (-0.5, 24.5)	23.1 (7.3, 39.0)	17.7 (4.6, 30.9)	1.15 (0.98, 1.31)	1.32 (1.06, 1.59)	1.24 (1.04, 1.44)
PCV3 (n=24)	14.6 (-4.5, 33.8)	14.2 (-2.0, 30.4)	21.6 (4.1, 39.1)	1.19 (0.91, 1.46)	1.19 (0.95, 1.44)	1.31 (1.01, 1.62)
RotaC (n=20)	-14.9 (-38.4, 8.6)	12.4 (-7.8, 32.7)	16.2 (-2.2, 34.6)	0.83 (0.60, 1.07)	1.17 (0.87, 1.47)	1.24 (0.93, 1.55)

The Eastern Mediterranean Region

BCG (n=19)	18.1 (-20.4, 56.7)	21.2 (-12.8, 55.2)	26.7 (-5.0, 58.4)	1.23 (0.67, 1.79)	1.28 (0.76, 1.79)	1.37 (0.83, 1.90)
DTP1 (n=21)	23.3 (-1.8, 48.5)	16.7 (-7.9, 41.3)	20.1 (-3.6, 43.7)	1.29 (0.92, 1.67)	1.21 (0.86, 1.55)	1.25 (0.91, 1.60)
DTP3 (n=21)	27.8 (-1.1, 56.7)	20.0 (-8.7, 48.8)	31.9 (6.8, 56.9)	1.37 (0.90, 1.85)	1.27 (0.82, 1.72)	1.47 (1.00, 1.94)
Pol3 (n=21)	27.2 (0.1, 54.2)	16.0 (-11.8, 43.8)	30.9 (7.4, 54.5)	1.36 (0.92, 1.81)	1.21 (0.80, 1.62)	1.45 (1.02, 1.88)
RCV1	5.6	5.9	15.6	1.06	1.07	1.19

(n=16)	(-21.9, 33.0)	(-20.2, 32.0)	(-11.4, 42.6)	(0.75, 1.38)	(0.76, 1.38)	(0.83, 1.55)
MCV1 (n=21)	32.5 (5.7, 59.4)	24.9 (-1.9, 51.7)	33.2 (9.6, 56.8)	1.46 (0.97, 1.94)	1.35 (0.90, 1.79)	1.50 (1.04, 1.95)
MCV2 (n=20)	41.4 (8.0, 74.7)	38.1 (6.4, 69.7)	47.7 (23.3, 72.1)	1.65 (0.93, 2.37)	1.59 (0.92, 2.26)	1.80 (1.17, 2.44)
HepB3 (n=21)	27.1 (-1.9, 56.2)	20.2 (-8.6, 48.9)	31.3 (6.4, 56.3)	1.37 (0.89, 1.84)	1.27 (0.82, 1.72)	1.46 (0.99, 1.93)
Hib3 (n=21)	28.1 (-0.7, 56.9)	20.0 (-8.7, 48.8)	31.9 (6.8, 56.9)	1.38 (0.90, 1.86)	1.27 (0.82, 1.72)	1.47 (1.00, 1.94)
PCV3 (n=16)	11.4 (-20.8, 43.6)	-0.6 (-43.1, 41.9)	14.4 (-31.2, 59.9)	1.14 (0.72, 1.57)	0.99 (0.47, 1.51)	1.20 (0.53, 1.86)
RotaC (n=15)	-0.3 (-49.7, 49.0)	-0.1 (-35.9, 35.7)	10.6 (-22.4, 43.6)	1.00 (0.39, 1.60)	1.00 (0.56, 1.44)	1.14 (0.67, 1.61)

The European Region

BCG (n=27)	-27.1 (-67.1, 12.8)	-27.2 (-66.7, 12.2)	-30.3 (-69.4, 8.9)	0.74 (0.38, 1.09)	0.73 (0.38, 1.09)	0.71 (0.36, 1.05)
DTP1 (n=52)	1.5 (-1.7, 4.6)	5.0 (1.6, 8.5)	5.0 (1.9, 8.1)	1.02 (0.98, 1.05)	1.05 (1.02, 1.09)	1.05 (1.02, 1.09)
DTP3 (n=52)	3.0 (-3.0, 9.0)	8.2 (2.0, 14.3)	7.4 (1.2, 13.7)	1.03 (0.97, 1.10)	1.09 (1.02, 1.17)	1.08 (1.01, 1.16)
Pol3 (n=52)	2.6 (-3.5, 8.8)	7.6 (1.7, 13.5)	6.8 (0.5, 13.1)	1.03 (0.96, 1.10)	1.09 (1.02, 1.15)	1.08 (1.00, 1.15)
RCV1 (n=52)	7.2 (-5.4, 19.8)	16.2 (2.6, 29.8)	12.1 (1.8, 22.3)	1.08 (0.93, 1.23)	1.20 (1.01, 1.39)	1.14 (1.01, 1.28)
MCV1 (n=52)	7.2 (-5.4, 19.8)	16.2 (2.6, 29.8)	12.1 (1.8, 22.3)	1.08 (0.93, 1.23)	1.20 (1.01, 1.39)	1.14 (1.01, 1.28)
MCV2 (n=51)	-5.5 (-11.5, 0.6)	3.9 (-4.0, 11.8)	-6.7 (-22.9, 9.5)	0.94 (0.88, 1.00)	1.05 (0.95, 1.14)	0.93 (0.75, 1.10)
HepB3 (n=47)	1.3 (-8.4, 11.0)	8.8 (-1.5, 19.2)	6.1 (-2.4, 14.7)	1.01 (0.91, 1.12)	1.10 (0.98, 1.23)	1.07 (0.97, 1.17)

Hib3 (n=51)	3.6 (-2.8, 10.1)	8.6 (2.1, 15.2)	7.0 (0.8, 13.3)	1.04 (0.97, 1.11)	1.10 (1.02, 1.18)	1.08 (1.01, 1.15)
PCV3 (n=40)	0.0 (-7.6, 7.6)	6.0 (-1.4, 13.4)	3.4 (-3.6, 10.4)	1.00 (0.92, 1.09)	1.07 (0.98, 1.16)	1.04 (0.96, 1.12)
RotaC (n=20)	27.1 (-9.9, 64.1)	14.4 (-21.2, 49.9)	18.8 (-16.1, 53.6)	1.46 (0.64, 2.28)	1.21 (0.61, 1.82)	1.29 (0.65, 1.93)

The South-East Asian Region

BCG (n=10)	4.2 (-6.6, 15.1)	16.2 (3.1, 29.4)	32.3 (-16.9, 81.4)	1.05 (0.93, 1.16)	1.19 (1.02, 1.36)	1.44 (0.57, 2.31)
DTP1 (n=10)	7.6 (-2.6, 17.8)	13.5 (-1.0, 28.1)	28.8 (-24.7, 82.4)	1.08 (0.97, 1.20)	1.16 (0.98, 1.34)	1.39 (0.48, 2.31)
DTP3 (n=10)	8.0 (-4.7, 20.6)	15.3 (-4.0, 34.6)	30.8 (-31.5, 93.1)	1.09 (0.94, 1.23)	1.19 (0.94, 1.43)	1.44 (0.30, 2.58)
Pol3 (n=10)	9.4 (-3.4, 22.1)	14.3 (-6.0, 34.7)	28.7 (-27.5, 84.9)	1.11 (0.96, 1.25)	1.17 (0.92, 1.43)	1.40 (0.43, 2.38)
RCV1 (n=10)	12.0 (-1.8, 25.8)	9.4 (-11.2, 30.0)	29.3 (-18.9, 77.6)	1.14 (0.97, 1.31)	1.11 (0.86, 1.36)	1.42 (0.53, 2.31)
MCV1 (n=10)	13.2 (-2.0, 28.4)	10.3 (-12.4, 33.1)	32.3 (-20.8, 85.4)	1.15 (0.96, 1.34)	1.12 (0.84, 1.40)	1.46 (0.48, 2.44)
MCV2 (n=10)	17.3 (-7.2, 41.8)	10.1 (-25.2, 45.4)	22.7 (-38.4, 83.7)	1.22 (0.88, 1.56)	1.13 (0.67, 1.59)	1.33 (0.30, 2.36)
HepB3 (n=10)	8.0 (-4.7, 20.6)	15.7 (-3.7, 35.2)	30.8 (-31.5, 93.1)	1.09 (0.94, 1.23)	1.19 (0.94, 1.44)	1.44 (0.30, 2.58)
Hib3 (n=9)	7.5 (-8.2, 23.2)	14.5 (-9.4, 38.4)	29.0 (-39.5, 97.5)	1.08 (0.90, 1.26)	1.18 (0.87, 1.48)	1.42 (0.18, 2.66)
PCV3 (n=6)	-69.8 (-216.4, 76.8)	-17.2 (-219.1, 184.7)	7.2 (-202.0, 216.4)	0.25 (-0.60, 1.11)	0.77 (-1.67, 3.20)	1.14 (-3.05, 5.32)
RotaC (n=1)	-	-	-	-	-	-

The Western Pacific Region						
BCG (n=22)	25.6 (8.0, 43.2)	28.3 (7.7, 48.8)	42.6 (15.7, 69.6)	1.32 (1.05, 1.60)	1.36 (1.03, 1.69)	1.64 (1.07, 2.21)
DTP1 (n=25)	13.5 (-3.0, 29.9)	20.6 (0.7, 40.5)	29.4 (5.2, 53.6)	1.15 (0.94, 1.36)	1.25 (0.97, 1.52)	1.38 (0.99, 1.77)
DTP3 (n=25)	25.0 (5.8, 44.1)	26.1 (4.6, 47.6)	39.0 (15.2, 62.8)	1.32 (1.01, 1.63)	1.34 (1.00, 1.68)	1.57 (1.09, 2.06)
Pol3 (n=25)	23.5 (6.3, 40.7)	29.1 (9.5, 48.8)	39.8 (16.8, 62.9)	1.30 (1.03, 1.57)	1.39 (1.06, 1.72)	1.60 (1.11, 2.08)
RCV1 (n=25)	21.3 (3.7, 38.8)	29.2 (12.6, 45.8)	47.1 (26.8, 67.5)	1.27 (1.00, 1.54)	1.40 (1.11, 1.68)	1.77 (1.27, 2.27)
MCV1 (n=25)	20.9 (3.2, 38.5)	29.2 (12.6, 45.8)	47.1 (26.8, 67.5)	1.26 (1.00, 1.53)	1.40 (1.11, 1.68)	1.77 (1.27, 2.27)
MCV2 (n=24)	36.8 (8.6, 65.0)	44.7 (19.0, 70.5)	62.0 (35.7, 88.3)	1.58 (0.94, 2.22)	1.76 (1.10, 2.43)	2.36 (1.28, 3.44)
HepB3 (n=25)	24.4 (5.5, 43.3)	24.9 (3.2, 46.6)	36.7 (12.5, 61.0)	1.31 (1.01, 1.62)	1.32 (0.98, 1.66)	1.53 (1.06, 2.00)
Hib3 (n=24)	19.9 (-6.8, 46.5)	24.6 (0.4, 48.7)	41.5 (13.4, 69.6)	1.26 (0.86, 1.65)	1.32 (0.94, 1.70)	1.64 (1.03, 2.25)
PCV3 (n=16)	19.4 (-20.6, 59.3)	20.1 (-14.1, 54.3)	32.9 (-4.3, 70.0)	1.28 (0.60, 1.95)	1.28 (0.72, 1.84)	1.51 (0.74, 2.28)
RotaC (n=7)	30.5 (-35.3, 96.3)	39.2 (-19.1, 97.6)	47.2 (-10.1, 104.5)	1.47 (0.05, 2.89)	1.67 (0.09, 3.25)	1.88 (-0.01, 3.77)

Data source: WHO-UNICEF Estimates of National Immunization Coverage (WUENIC): 2021 revision

Notes: * SII is measured in percentage points. BCG, Bacillus Calmette-Guérin vaccine; DTP, diphtheria-tetanus-pertussis vaccine; Pol, Polio vaccine; RCV1, rubella-containing vaccine; MCV, measles-containing vaccine; HepB, Hepatitis B vaccine; Hib, Haemophilus influenzae type b vaccine; PCV, pneumococcal conjugate vaccine, RotaC, completed rotavirus vaccine.

Webappendix table 7: Bonferroni-adjusted results of Jonckheere-Terpstra test and Willcoxon-Mann-Whitney rank sum test by region, combining values of 11 vaccines

Region	<i>P</i> -value of Jonckheere-Terpstra test		<i>P</i> -value of Willcoxon-Mann-Whitney rank sum test	
	SII	RII	SII	RII
Global	0.3506	0.2272	0.4972	0.3906
The African Region	1.0000	1.0000	1.0000	1.0000
The Region of the Americas	0.0210	0.0063	0.0100	0.0096
The Eastern Mediterranean Region	1.0000	1.0000	1.0000	1.0000
The European Region	1.0000	1.0000	1.0000	1.0000
The South-East Asian Region	0.0004	0.0001	0.0163	0.0035
The Western Pacific Region	0.0001	0.0003	0.0023	0.0029

Data source: WHO-UNICEF Estimates of National Immunization Coverage (WUENIC): 2021 revision

Notes: The Jonckheere-Terpstra test used data in 2019-2021, and the Willcoxon-Mann-Whitney rank sum test used data in 2019 and 2021. Since the commands do not directly incorporate multiplicity correction methods, the Bonferroni adjustment was performed by taking the observed (uncorrected) *p*-values and multiplying them by the number of comparisons (11 vaccines). *P*-values larger than 1.0 after adjustment were recorded as 1.0. A two-sided *p*-value below 0.05 was considered statistically significant.

Webappendix table 8: Changes in DTP3 coverage rate from 2019 to 2021 in 195 countries and territories

Income group	Country code	Country name	DTP3 coverage		
			2019 (%)	2021 (%)	Difference (Percentage points)
Low	AFG	Afghanistan	72	66	-6
Low	BDI	Burundi	93	94	1
Low	BFA	Burkina Faso	91	91	0
Low	CAF	Central African Republic	42	42	0
Low	COD	Congo, Dem. Rep.	73	65	-8
Low	ERI	Eritrea	95	95	0
Low	ETH	Ethiopia	68	65	-3
Low	GIN	Guinea	47	47	0
Low	GMB	Gambia, The	88	82	-6
Low	GNB	Guinea-Bissau	78	67	-11
Low	LBR	Liberia	70	66	-4
Low	MDG	Madagascar	68	55	-13
Low	MLI	Mali	77	77	0
Low	MOZ	Mozambique	88	61	-27
Low	MWI	Malawi	95	93	-2
Low	NER	Niger	81	82	1
Low	PRK	Korea, Dem. People's Rep.	97	41	-56
Low	RWA	Rwanda	98	88	-10
Low	SDN	Sudan	93	84	-9
Low	SLE	Sierra Leone	95	92	-3
Low	SOM	Somalia	42	42	0
Low	SSD	South Sudan	49	49	0
Low	SYR	Syrian Arab Republic	54	48	-6
Low	TCD	Chad	50	58	8
Low	TGO	Togo	84	83	-1
Low	UGA	Uganda	93	91	-2
Low	YEM	Yemen, Rep.	73	72	-1
Low	ZMB	Zambia	88	91	3
Lower middle	AGO	Angola	57	45	-12
Lower middle	BEN	Benin	76	76	0
Lower middle	BGD	Bangladesh	98	98	0
Lower middle	BOL	Bolivia	75	70	-5
Lower middle	BTN	Bhutan	97	98	1
Lower middle	CIV	Côte d'Ivoire	81	76	-5
Lower middle	CMR	Cameroon	67	69	2
Lower middle	COG	Congo, Rep.	79	77	-2
Lower middle	COM	Comoros	91	85	-6
Lower middle	CPV	Cabo Verde	96	93	-3

Lower middle	DJI	Djibouti	85	59	-26
Lower middle	DZA	Algeria	91	91	0
Lower middle	EGY	Egypt, Arab Rep.	95	96	1
Lower middle	FSM	Micronesia, Fed. Sts.	78	72	-6
Lower middle	GHA	Ghana	97	98	1
Lower middle	HND	Honduras	88	77	-11
Lower middle	HTI	Haiti	51	51	0
Lower middle	IDN	Indonesia	85	67	-18
Lower middle	IND	India	91	85	-6
Lower middle	IRN	Iran, Islamic Rep.	99	98	-1
Lower middle	KEN	Kenya	91	91	0
Lower middle	KGZ	Kyrgyz Republic	95	89	-6
Lower middle	KHM	Cambodia	92	92	0
Lower middle	KIR	Kiribati	97	92	-5
Lower middle	LAO	Lao PDR	80	75	-5
Lower middle	LBN	Lebanon	83	67	-16
Lower middle	LKA	Sri Lanka	99	96	-3
Lower middle	LSO	Lesotho	87	87	0
Lower middle	MAR	Morocco	99	99	0
Lower middle	MMR	Myanmar	90	37	-53
Lower middle	MNG	Mongolia	98	95	-3
Lower middle	MRT	Mauritania	80	68	-12
Lower middle	NGA	Nigeria	56	56	0
Lower middle	NIC	Nicaragua	98	87	-11
Lower middle	NPL	Nepal	93	91	-2
Lower middle	PAK	Pakistan	84	83	-1
Lower middle	PHL	Philippines	71	57	-14
Lower middle	PNG	Papua New Guinea	35	31	-4
Lower middle	PSE	West Bank and Gaza	99	95	-4
Lower middle	SEN	Senegal	95	85	-10
Lower middle	SLB	Solomon Islands	94	87	-7
Lower middle	SLV	El Salvador	81	79	-2
Lower middle	STP	São Tomé and Príncipe	95	97	2
Lower middle	SWZ	Eswatini	90	77	-13
Lower middle	TJK	Tajikistan	97	97	0
Lower middle	TLS	Timor-Leste	90	86	-4
Lower middle	TUN	Tunisia	98	97	-1
Lower middle	TZA	Tanzania	89	81	-8
Lower middle	UKR	Ukraine	80	78	-2
Lower middle	UZB	Uzbekistan	96	98	2
Lower middle	VEN	Venezuela, RB	64	56	-8
Lower middle	VNM	Vietnam	89	83	-6
Lower middle	VUT	Vanuatu	90	62	-28
Lower middle	WSM	Samoa	68	85	17

Lower middle	ZWE	Zimbabwe	90	86	-4
Upper middle	ALB	Albania	99	98	-1
Upper middle	ARG	Argentina	83	76	-7
Upper middle	ARM	Armenia	92	93	1
Upper middle	AZE	Azerbaijan	94	89	-5
Upper middle	BGR	Bulgaria	93	89	-4
Upper middle	BIH	Bosnia and Herzegovina	73	73	0
Upper middle	BLR	Belarus	98	98	0
Upper middle	BLZ	Belize	98	83	-15
Upper middle	BRA	Brazil	70	68	-2
Upper middle	BWA	Botswana	95	95	0
Upper middle	CHN	China	99	99	0
Upper middle	COL	Colombia	94	86	-8
Upper middle	CRI	Costa Rica	95	99	4
Upper middle	CUB	Cuba	99	99	0
Upper middle	DMA	Dominica	99	92	-7
Upper middle	DOM	Dominican Republic	89	84	-5
Upper middle	ECU	Ecuador	85	72	-13
Upper middle	FJI	Fiji	99	99	0
Upper middle	GAB	Gabon	70	75	5
Upper middle	GEO	Georgia	94	85	-9
Upper middle	GNQ	Equatorial Guinea	53	53	0
Upper middle	GRD	Grenada	92	72	-20
Upper middle	GTM	Guatemala	85	79	-6
Upper middle	GUY	Guyana	99	91	-8
Upper middle	IRQ	Iraq	84	78	-6
Upper middle	JAM	Jamaica	96	90	-6
Upper middle	JOR	Jordan	89	77	-12
Upper middle	KAZ	Kazakhstan	97	95	-2
Upper middle	LBY	Libya	73	73	0
Upper middle	LCA	St. Lucia	92	80	-12
Upper middle	MDA	Moldova	91	87	-4
Upper middle	MDV	Maldives	98	96	-2
Upper middle	MEX	Mexico	82	78	-4
Upper middle	MHL	Marshall Islands	79	86	7
Upper middle	MKD	North Macedonia	92	81	-11
Upper middle	MNE	Montenegro	85	83	-2
Upper middle	MUS	Mauritius	96	92	-4
Upper middle	MYS	Malaysia	98	95	-3
Upper middle	NAM	Namibia	87	93	6
Upper middle	PER	Peru	88	82	-6
Upper middle	PLW	Palau	97	95	-2
Upper middle	PRY	Paraguay	86	70	-16
Upper middle	RUS	Russian Federation	97	97	0

Upper middle	SRB	Serbia	97	92	-5
Upper middle	SUR	Suriname	77	72	-5
Upper middle	THA	Thailand	97	97	0
Upper middle	TKM	Turkmenistan	99	97	-2
Upper middle	TON	Tonga	99	99	0
Upper middle	TUR	Türkiye	99	95	-4
Upper middle	TUV	Tuvalu	92	94	2
Upper middle	VCT	St. Vincent and the Grenadines	97	97	0
Upper middle	ZAF	South Africa	85	86	1
High	AND	Andorra	99	99	0
High	ARE	United Arab Emirates	99	96	-3
High	ATG	Antigua and Barbuda	95	92	-3
High	AUS	Australia	95	95	0
High	AUT	Austria	85	85	0
High	BEL	Belgium	97	98	1
High	BHR	Bahrain	99	98	-1
High	BHS	Bahamas, The	89	75	-14
High	BRB	Barbados	90	82	-8
High	BRN	Brunei Darussalam	99	99	0
High	CAN	Canada	91	92	1
High	CHE	Switzerland	96	96	0
High	CHL	Chile	96	95	-1
High	COK	Cook Islands	98	98	0
High	CYP	Cyprus	96	96	0
High	CZE	Czech Republic	97	94	-3
High	DEU	Germany	91	91	0
High	DNK	Denmark	97	97	0
High	ESP	Spain	95	92	-3
High	EST	Estonia	91	90	-1
High	FIN	Finland	91	89	-2
High	FRA	France	96	96	0
High	GBR	United Kingdom	93	93	0
High	GRC	Greece	99	99	0
High	HRV	Croatia	94	92	-2
High	HUN	Hungary	99	99	0
High	IRL	Ireland	94	94	0
High	ISL	Iceland	92	92	0
High	ISR	Israel	98	98	0
High	ITA	Italy	96	94	-2
High	JPN	Japan	98	96	-2
High	KNA	St. Kitts and Nevis	97	96	-1
High	KOR	Korea, Rep.	98	98	0
High	KWT	Kuwait	92	94	2

High	LTU	Lithuania	92	90	-2
High	LUX	Luxembourg	99	99	0
High	LVA	Latvia	99	94	-5
High	MCO	Monaco	99	99	0
High	MLT	Malta	98	99	1
High	NIU	Niue	99	99	0
High	NLD	Netherlands	94	95	1
High	NOR	Norway	97	97	0
High	NRU	Nauru	96	98	2
High	NZL	New Zealand	92	90	-2
High	OMN	Oman	99	99	0
High	PAN	Panama	88	74	-14
High	POL	Poland	95	90	-5
High	PRT	Portugal	99	99	0
High	QAT	Qatar	98	98	0
High	ROU	Romania	88	86	-2
High	SAU	Saudi Arabia	96	97	1
High	SGP	Singapore	96	96	0
High	SMR	San Marino	88	90	2
High	SVK	Slovak Republic	97	97	0
High	SVN	Slovenia	95	86	-9
High	SWE	Sweden	98	98	0
High	SYC	Seychelles	99	94	-5
High	TTO	Trinidad and Tobago	93	94	1
High	URY	Uruguay	94	89	-5
High	USA	United States	94	93	-1
World weighted average			86.2	81.4	-4.8

Data source: WHO-UNICEF Estimates of National Immunization Coverage (WUENIC): 2021 revision

Webappendix table 9: Number of DTP3 unvaccinated children in 2021 in 195 countries and territories

Income group	Country code	Country name	Children <1 year in 2021 (thousand)	DTP3 coverage in 2021	Unvaccinated children in 2021 (thousand)
Low	AFG	Afghanistan	1324	66%	450
Low	BDI	Burundi	415	94%	25
Low	BFA	Burkina Faso	728	91%	66
Low	CAF	Central African Republic	204	42%	118
Low	COD	Congo, Dem. Rep.	3657	65%	1280
Low	ERI	Eritrea	98	95%	5
Low	ETH	Ethiopia	3669	65%	1284
Low	GIN	Guinea	426	47%	226
Low	GMB	Gambia, The	83	82%	15
Low	GNB	Guinea-Bissau	60	67%	20
Low	LBR	Liberia	151	66%	51
Low	MDG	Madagascar	845	55%	380
Low	MLI	Mali	825	77%	190
Low	MOZ	Mozambique	1077	61%	420
Low	MWI	Malawi	619	93%	43
Low	NER	Niger	1037	82%	187
Low	PRK	Korea, Dem. People's Rep.	341	41%	201
Low	RWA	Rwanda	384	88%	46
Low	SDN	Sudan	1449	84%	232
Low	SLE	Sierra Leone	241	92%	19
Low	SOM	Somalia	662	42%	384
Low	SSD	South Sudan	285	49%	145
Low	SYR	Syrian Arab Republic	393	48%	204
Low	TCD	Chad	667	58%	280
Low	TGO	Togo	258	83%	44
Low	UGA	Uganda	1581	91%	142
Low	YEM	Yemen, Rep.	955	72%	267
Low	ZMB	Zambia	626	91%	56
Lower middle	AGO	Angola	1229	45%	676
Lower middle	BEN	Benin	438	76%	105
Lower middle	BGD	Bangladesh	2952	98%	59
Lower middle	BOL	Bolivia	255	70%	77
Lower middle	BTN	Bhutan	10	98%	0
Lower middle	CIV	Côte d'Ivoire	853	76%	205
Lower middle	CMR	Cameroon	885	69%	274
Lower middle	COG	Congo, Rep.	171	77%	39
Lower middle	COM	Comoros	23	85%	3
Lower middle	CPV	Cabo Verde	10	93%	1

Lower middle	DJI	Djibouti	23	59%	10
Lower middle	DZA	Algeria	965	91%	87
Lower middle	EGY	Egypt, Arab Rep.	2439	96%	98
Lower middle	FSM	Micronesia, Fed. Sts.	2	72%	1
Lower middle	GHA	Ghana	870	98%	17
Lower middle	HND	Honduras	213	77%	49
Lower middle	HTI	Haiti	257	51%	126
Lower middle	IDN	Indonesia	4451	67%	1469
Lower middle	IND	India	22687	85%	3403
Lower middle	IRN	Iran, Islamic Rep.	1258	98%	25
Lower middle	KEN	Kenya	1393	91%	125
Lower middle	KGZ	Kyrgyz Republic	161	89%	18
Lower middle	KHM	Cambodia	320	92%	26
Lower middle	KIR	Kiribati	3	92%	0
Lower middle	LAO	Lao PDR	158	75%	39
Lower middle	LBN	Lebanon	83	67%	27
Lower middle	LKA	Sri Lanka	308	96%	12
Lower middle	LSO	Lesotho	55	87%	7
Lower middle	MAR	Morocco	650	99%	6
Lower middle	MMR	Myanmar	897	37%	565
Lower middle	MNG	Mongolia	74	95%	4
Lower middle	MRT	Mauritania	142	68%	45
Lower middle	NGA	Nigeria	7130	56%	3137
Lower middle	NIC	Nicaragua	139	87%	18
Lower middle	NPL	Nepal	592	91%	53
Lower middle	PAK	Pakistan	5974	83%	1016
Lower middle	PHL	Philippines	2407	57%	1035
Lower middle	PNG	Papua New Guinea	243	31%	168
Lower middle	PSE	West Bank and Gaza	142	95%	7
Lower middle	SEN	Senegal	524	85%	79
Lower middle	SLB	Solomon Islands	20	87%	3
Lower middle	SLV	El Salvador	101	79%	21
Lower middle	STP	São Tomé and Príncipe	6	97%	0
Lower middle	SWZ	Eswatini	28	77%	6
Lower middle	TJK	Tajikistan	256	97%	8
Lower middle	TLS	Timor-Leste	32	86%	4
Lower middle	TUN	Tunisia	202	97%	6
Lower middle	TZA	Tanzania	2157	81%	410
Lower middle	UKR	Ukraine	344	78%	76
Lower middle	UZB	Uzbekistan	806	98%	16
Lower middle	VEN	Venezuela, RB	455	56%	200
Lower middle	VNM	Vietnam	1469	83%	250
Lower middle	VUT	Vanuatu	9	62%	3
Lower middle	WSM	Samoa	6	85%	1

Lower middle	ZWE	Zimbabwe	465	86%	65
Upper middle	ALB	Albania	28	98%	1
Upper middle	ARG	Argentina	642	76%	154
Upper middle	ARM	Armenia	35	93%	2
Upper middle	AZE	Azerbaijan	137	89%	15
Upper middle	BGR	Bulgaria	60	89%	7
Upper middle	BIH	Bosnia and Herzegovina	30	73%	8
Upper middle	BLR	Belarus	90	98%	2
Upper middle	BLZ	Belize	7	83%	1
Upper middle	BRA	Brazil	2800	68%	896
Upper middle	BWA	Botswana	60	95%	3
Upper middle	CHN	China	13347	99%	133
Upper middle	COL	Colombia	733	86%	103
Upper middle	CRI	Costa Rica	63	99%	1
Upper middle	CUB	Cuba	107	99%	1
Upper middle	DMA	Dominica	1	92%	0
Upper middle	DOM	Dominican Republic	202	84%	32
Upper middle	ECU	Ecuador	298	72%	83
Upper middle	FJI	Fiji	18	99%	0
Upper middle	GAB	Gabon	61	75%	15
Upper middle	GEO	Georgia	49	85%	7
Upper middle	GNQ	Equatorial Guinea	47	53%	22
Upper middle	GRD	Grenada	2	72%	1
Upper middle	GTM	Guatemala	376	79%	79
Upper middle	GUY	Guyana	16	91%	1
Upper middle	IRQ	Iraq	1148	78%	253
Upper middle	JAM	Jamaica	33	90%	3
Upper middle	JOR	Jordan	240	77%	55
Upper middle	KAZ	Kazakhstan	412	95%	21
Upper middle	LBY	Libya	121	73%	33
Upper middle	LCA	St. Lucia	2	80%	0
Upper middle	MDA	Moldova	39	87%	5
Upper middle	MDV	Maldives	8	96%	0
Upper middle	MEX	Mexico	1938	78%	426
Upper middle	MHL	Marshall Islands	1	86%	0
Upper middle	MKD	North Macedonia	20	81%	4
Upper middle	MNE	Montenegro	7	83%	1
Upper middle	MUS	Mauritius	13	92%	1
Upper middle	MYS	Malaysia	509	95%	25
Upper middle	NAM	Namibia	67	93%	5
Upper middle	PER	Peru	588	82%	106
Upper middle	PLW	Palau	0	95%	0
Upper middle	PRY	Paraguay	136	70%	41
Upper middle	RUS	Russian Federation	1466	97%	44

Upper middle	SRB	Serbia	69	92%	6
Upper middle	SUR	Suriname	11	72%	3
Upper middle	THA	Thailand	658	97%	20
Upper middle	TKM	Turkmenistan	135	97%	4
Upper middle	TON	Tonga	2	99%	0
Upper middle	TUR	Türkiye	1270	95%	63
Upper middle	TUV	Tuvalu	0	94%	0
		St. Vincent and the			
Upper middle	VCT	Grenadines	1	97%	0
Upper middle	ZAF	South Africa	1185	86%	166
High	AND	Andorra	0	99%	0
High	ARE	United Arab Emirates	98	96%	4
High	ATG	Antigua and Barbuda	1	92%	0
High	AUS	Australia	304	95%	15
High	AUT	Austria	84	85%	13
High	BEL	Belgium	117	98%	2
High	BHR	Bahrain	19	98%	0
High	BHS	Bahamas, The	5	75%	1
High	BRB	Barbados	3	82%	1
High	BRN	Brunei Darussalam	6	99%	0
High	CAN	Canada	375	92%	30
High	CHE	Switzerland	85	96%	3
High	CHL	Chile	229	95%	11
High	COK	Cook Islands	0	98%	0
High	CYP	Cyprus	13	96%	1
High	CZE	Czech Republic	109	94%	7
High	DEU	Germany	777	91%	70
High	DNK	Denmark	62	97%	2
High	ESP	Spain	354	92%	28
High	EST	Estonia	14	90%	1
High	FIN	Finland	46	89%	5
High	FRA	France	667	96%	27
High	GBR	United Kingdom	698	93%	49
High	GRC	Greece	83	99%	1
High	HRV	Croatia	36	92%	3
High	HUN	Hungary	93	99%	1
High	IRL	Ireland	60	94%	4
High	ISL	Iceland	5	92%	0
High	ISR	Israel	180	98%	4
High	ITA	Italy	413	94%	25
High	JPN	Japan	825	96%	33
High	KNA	St. Kitts and Nevis	1	96%	0
High	KOR	Korea, Rep.	302	98%	6
High	KWT	Kuwait	50	94%	3

High	LTU	Lithuania	27	90%	3
High	LUX	Luxembourg	7	99%	0
High	LVA	Latvia	18	94%	1
High	MCO	Monaco	0	99%	0
High	MLT	Malta	5	99%	0
High	NIU	Niue	0	99%	0
High	NLD	Netherlands	172	95%	9
High	NOR	Norway	54	97%	2
High	NRU	Nauru	0	98%	0
High	NZL	New Zealand	62	90%	6
High	OMN	Oman	87	99%	1
High	PAN	Panama	76	74%	20
High	POL	Poland	364	90%	36
High	PRT	Portugal	86	99%	1
High	QAT	Qatar	29	98%	1
High	ROU	Romania	200	86%	28
High	SAU	Saudi Arabia	647	97%	19
High	SGP	Singapore	48	96%	2
High	SMR	San Marino	0	90%	0
High	SVK	Slovak Republic	57	97%	2
High	SVN	Slovenia	20	86%	3
High	SWE	Sweden	116	98%	2
High	SYC	Seychelles	2	94%	0
High	TTO	Trinidad and Tobago	18	94%	1
High	URY	Uruguay	36	89%	4
High	USA	United States	3735	93%	261
World weighted average			132071	81.4%	24568

Data source: WHO-UNICEF Estimates of National Immunization Coverage (WUENIC): 2021 revision