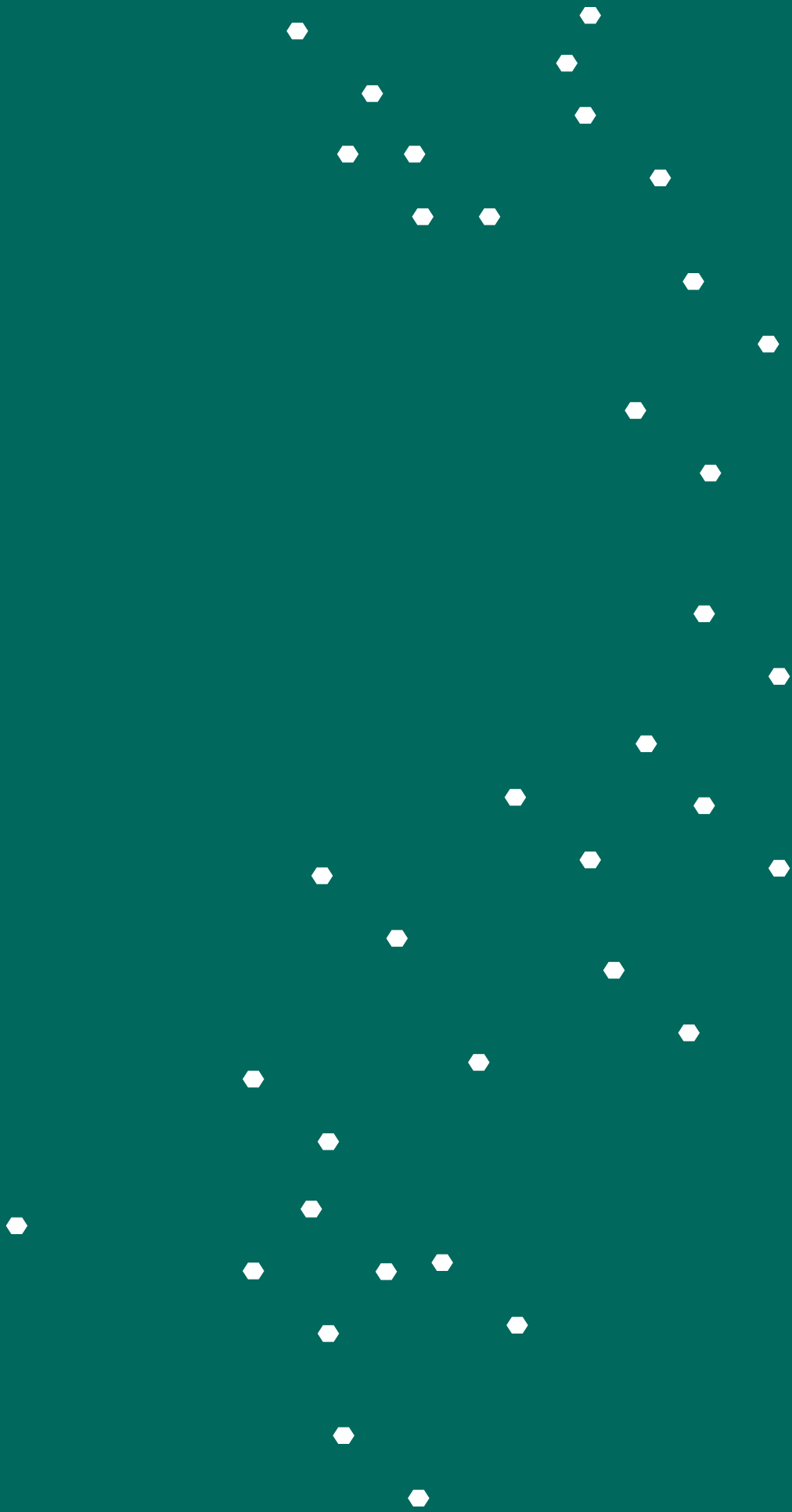




VACCINE ALMANAC

FEBRUARY 2024



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VOLUME 10 ISSUE 1.0

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SCOPE

Different sections of the Vaccine Almanac cover different vaccine markets, i.e.:

- Licensed and/or candidate vaccines
- Non-adult and/or adult vaccines
- Public and/or private markets
- Routine immunization, campaign and/or stockpile needs
- Traveler, military and hospital markets

Current coverage by different sections is shown in the table below. Where an individual figure in a section excludes a specific vaccine, we note this in the figure description.

Linksbridge’s Q1 2024 through Q1 2025 program of work to expand the scope of the Vaccine Almanac is to add:

In Section 2 (Demand)

- Candidate vaccines

In Section 3 (Pricing)

- Candidate vaccines
- Remaining adult vaccines

In Section 6 (Value)

- Based on our extensions to Sections 2, 3 and 7

In Section 7 (Private Markets)

- Candidate vaccines
- Remaining adult vaccines

For more information, please email gvm@linksbridge.com.

	Licensed	Candidate	Non-adult	Adult	Public	Private	Traveler	Military	Hospital
Demand	●	●	●	●	●				
Supply	●	●	●	●	●	●	●	●	●
Pricing	●	●	●	●	●	●	●	●	●
Share	●		●	●	●				
Value	●	●	●	●	●	●	●	●	●
Private Markets	●	●	●	●		●	●	●	

- Included
- Included (partial)
- Planned (future)

INTRODUCTION

Welcome to the February 2024 version of the Vaccine Almanac, with fully updated information and some new exhibits! This almanac is divided into eight sections:

Section 1. Countries	Current and projected country income and Gavi eligibility status
Section 2. Demand	Demand for all vaccines for all countries 2022-2033, and partial data on campaign, outbreak and stockpile vaccines
Section 3. Supply	Marketed and pipeline vaccines
Section 4. Pricing	Vaccines bought by major procurers and countries since 2009
Section 5. Share	Estimated share of global and Gavi vaccine markets per company type
Section 6. Value	Estimated value of vaccine markets to industry by country income group, region and vaccine franchise for 2004-2023
Section 7. Private Markets	Estimated value of private market vaccines
Section 8. Ready Reference	Detailed information on countries, demand, supply, pricing, share and value summarized in sections 1-7

Data for the almanac comes from the Global Vaccine Market Model (GVMM), a data-sharing collaboration supported by the Gates Foundation's Global Delivery Programs (GDP) team using information from the foundation, CDC, CHAI, PAHO, PATH, UNICEF and WHO that is curated by Linksbridge SPC.

FURTHER INFORMATION AND FUTURE UPDATES

Please email gvm@linksbridge.com to request access to:

- The fully online version of the Vaccine Almanac
- Additional datasets referenced in the almanac

You can also email us to ask questions about any information included in the almanac, to offer corrections, and to suggest additional data sources to include.

Linksbridge issues updates to the Vaccine Almanac annually.

CONFIDENTIALITY AND DATA SOURCING

The Vaccine Almanac contains non-confidential data only, i.e., free of commercial or non-disclosure agreements.

Information is sourced to original providers where data is included directly.

Data aggregated from multiple providers, derived from original sources, or generated by modeling is attributed to GVMM.

Section introductions and exhibit descriptions provide additional information where applicable on data sources and known data gaps.

ABBREVIATIONS AND ACRONYMS

BCG	Bacillus Calmette-Guérin (vaccine)	OPV	Oral Polio Vaccine
BMGF	Bill & Melinda Gates Foundation	bOPV	Bivalent Oral Polio Vaccine
CDC	Centers for Disease Control and Prevention	mOPV	Monovalent Oral Polio Vaccine
CHAI	Clinton Health Access Initiative	tOPV	Trivalent Oral Polio Vaccine
DT	Diphtheria-Tetanus Vaccine	PAHO	Pan American Health Organization
DTP	Diphtheria-Tetanus-Pertussis Vaccine	PCV	Pneumococcal Conjugate Vaccine
DTaP	Diphtheria-Tetanus-acellular Pertussis Vaccine	Pneumo	Pneumococcal Vaccine
DTwP	Diphtheria-Tetanus-whole cell Pertussis Vaccine	PPSV	Pneumococcal Polysaccharide Vaccine
ETEC	Escherichia Coli Vaccine	PQ	Prequalified
GBS	Guillaine-Barre Syndrome Vaccine	RF	Revolving Fund
GDP	Gross Domestic Product	ROA	Route of Administration
GSK	GlaxoSmithKline	Rota	Rotavirus
GVMM	Global Vaccine Market Model	RSV	Respiratory Syncytial Virus Vaccine
HepA	Hepatitis A Vaccine	SARS	Severe Acute Respiratory Syndrome Virus Vaccine
HepB	Hepatitis B Vaccine	SDF	Strategic Demand Forecast
HepC	Hepatitis C Vaccine	SIA	Supplementary Immunization Activity
HepD	Hepatitis D Vaccine	SII	Serum Institute of India
HepE	Hepatitis E Vaccine	sIPV	Sabin Inactivated Poliovirus Vaccine
Hib	Haemophilus Influenzae Type b Vaccine	TB	Tuberculosis Vaccine
HIC	High-Income Country	TCV	Typhoid Conjugate Vaccine
HIV	Human Immunodeficiency Virus Vaccine	Td	Tetanus-Diphtheria Vaccine (for adults)
HPV	Human Papillomavirus Vaccine	TdaP	Tetanus-Diphtheria-acellular Pertussis Vaccine (for adults)
IMF	International Monetary Fund	TT	Tetanus Toxoid Vaccine
IPV	Inactivated Polio Vaccine	UMIC	Upper-Middle-Income Country
JE	Japanese Encephalitis Vaccine	UNICEF	United Nations Children's Fund
JRF	UNICEF/WHO Joint Reporting Form	UNPD	United Nations Population Division
LIC	Low-Income Country	VIS	Vaccine Investment Strategy
LMIC	Lower-Middle-Income Country	VxD	Vaccine Delivery
MAC	Multi-age Cohort Vaccination	WAP	Weighted Average Price
MCV	Measles-Containing Vaccine	WB	World Bank
MenA	Meningococcal Vaccine Type A	WHO	World Health Organization
MenBC	Meningococcal Vaccine Type B & C	WPP	World Population Prospects
MenC	Meningococcal Vaccine Type C	WRA	Women of Reproductive Age
MenACW	Meningococcal Vaccine Type A, C & W	WUENIC	WHO and UNICEF Estimated Immunization Coverage
MenMV	Meningococcal Multivalent Vaccine	YF	Yellow Fever Vaccine
MI4A	Market Information for Access to Vaccines		
MIC	Middle-Income Country		
MM	Measles and Mumps Vaccine		
MMR	Measles, Mumps and Rubella Vaccine		
MMRV	Measles, Mumps, Rubella and Varicella Vaccine		
MR	Measles and Rubella Vaccine		
NTHi	Nontypeable Haemophilus influenzae Vaccine		
OCV	Oral Cholera Vaccine		



1.0 COUNTRIES

This section lists UNPD estimated birth cohort, IMF projected GDP per capita and Gavi co-financing status for all countries in the world by WHO region, World Bank status, and Gavi eligibility in 2024.

Country Status (2024)

FIGURE 1.1

This exhibit shows countries grouped by WHO region, 2023-2024 World Bank status and Gavi eligibility. Forecasted 2024 Gavi co-financing status, birth cohort and GDP per capita are shown for each country.

GDP per capita is presented as a bar chart. Gavi co-financing phase for each country is represented by bar color.

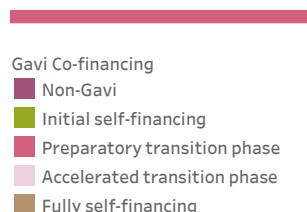
Source: Gavi, IMF, UNPD, World Bank

Gavi Co-financing

- Non-Gavi
- Initial self-financing
- Preparatory transition phase
- Accelerated transition phase
- Fully self-financing

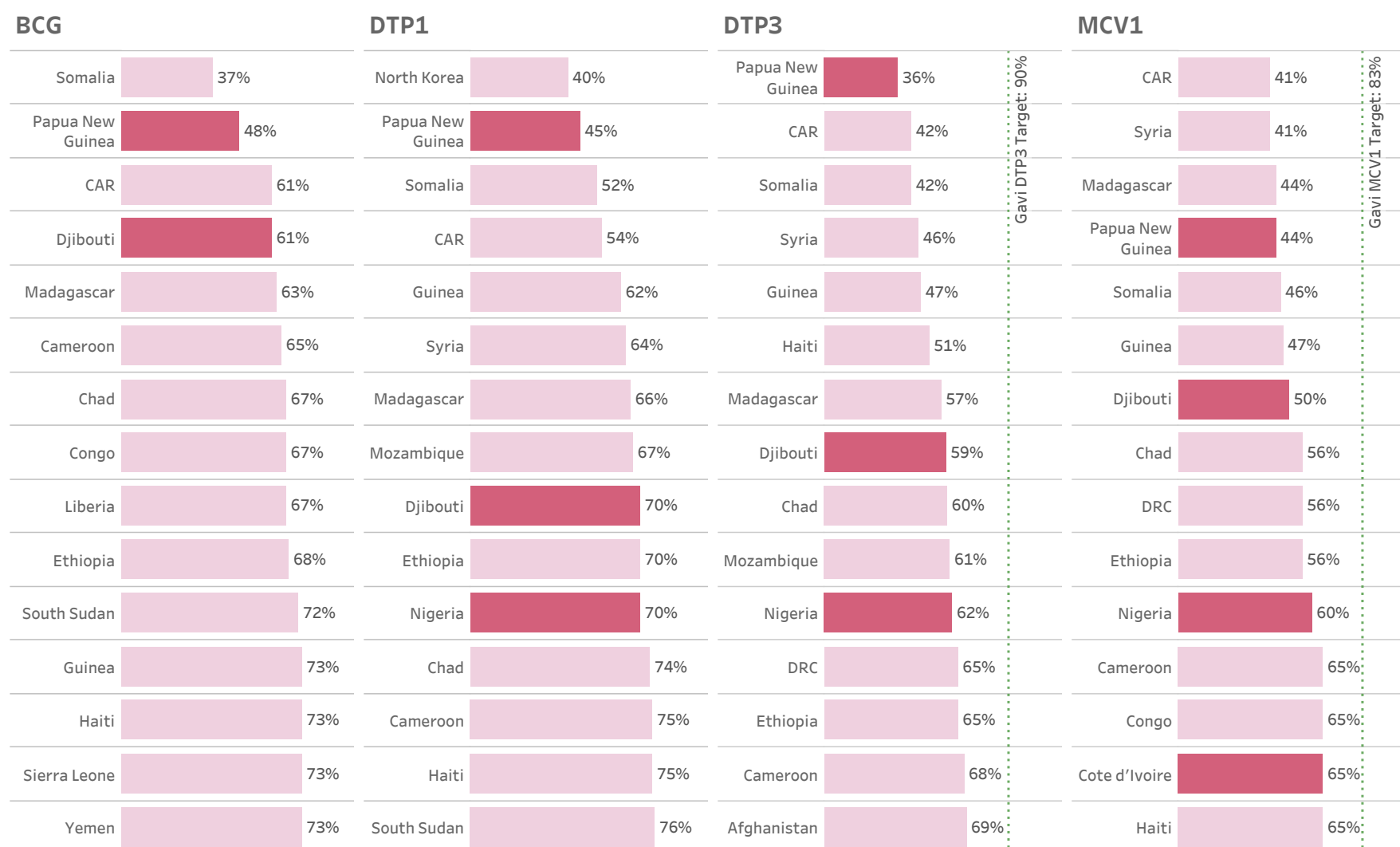
WHO Region	WB Status	Gavi Eligibility	Country Name	Birth Cohort	GDP Per Capita (USD)				
					0K	50K	100K	150K	
AFR	LIC	Eligible	Burkina Faso	774,869	\$942				
			Burundi	431,276	\$251				
			CAR	235,248	\$557				
			Chad	747,980	\$683				
			DRC	4,118,754	\$747				
			Eritrea	104,080	\$755				
			Ethiopia	3,871,051	\$1,715				
			Gambia	87,713	\$919				
			Guinea-Bissau	62,450	\$1,023				
			Liberia	160,913	\$849				
			Madagascar	898,503	\$561				
			Malawi	667,260	\$466				
			Mali	921,494	\$924				
			Mozambique	1,170,412	\$638				
			Niger	1,195,267	\$677				
			Rwanda	401,554	\$984				
	Sierra Leone	253,642	\$417						
	South Sudan	309,046	\$459						
	Togo	273,245	\$1,037						
	Uganda	1,687,738	\$1,160						
	LMIC	Eligible	Benin	469,141	\$1,450				
			Cameroon	938,604	\$1,795				
			Comoros	23,361	\$1,369				
			Guinea	451,740	\$1,650				
			Lesotho	56,403	\$1,252				
			Mauritania	154,377	\$2,516				
			Senegal	556,144	\$1,876				
			Tanzania	2,340,051	\$1,444				
			Zambia	678,056	\$1,489				
			Zimbabwe	480,534	\$1,619				
			Non-Gavi	Algeria	869,998	\$4,523			
				Cabo Verde	9,668	\$4,516			
Eswatini				27,353	\$4,346				
Transitioned from Gavi				Angola	1,341,057	\$3,276			
				Congo	177,559	\$2,651			
				Cote d'Ivoire	926,682	\$2,786			
	Ghana	885,686		\$2,013					
Transitioning	Kenya	1,476,913		\$2,283					
	Nigeria	7,742,760	\$2,432						
	Sao Tome	6,412	\$2,797						
	UMIC	Non-Gavi	Botswana	58,424	\$7,628				
			Equatorial Guinea	48,457	\$8,325				
			Gabon	62,152	\$9,428				
			Mauritius	13,072	\$12,269				
			Namibia	67,329	\$5,306				
South Africa			1,111,244	\$6,648					
Seychelles			1,559	\$20,682					
AMR			LMIC	Eligible	Haiti	257,589	\$2,229		
	Venezuela	462,407			\$3,804				
	Non-Gavi	Bolivia		259,016	\$3,964				
		Transitioned from Gavi		Honduras	214,694	\$3,411			

WHO Region	WB Status	Gavi Eligibility	Country Name	Birth Cohort	GDP Per Capita (USD)						
					OK	50K	100K	150K			
AMR	LMIC	Transitioned from Gavi	Nicaragua	136,060	\$2,725						
			UMIC	Non-Gavi	Argentina	619,763	\$13,521				
					Belize	7,185	\$7,193				
					Brazil	2,664,716	\$10,218				
					Colombia	699,817	\$6,593				
					Costa Rica	59,630	\$15,375				
					Dominica	953	\$9,752				
					Dominican Rep.	195,405	\$12,011				
					Ecuador	294,392	\$6,830				
					El Salvador	98,199	\$5,495				
					Grenada	1,886	\$11,878				
					Guatemala	367,923	\$5,699				
					Jamaica	31,585	\$6,586				
					Mexico	1,835,091	\$13,098				
					Paraguay	134,872	\$5,915				
					Peru	580,821	\$8,018				
					Saint Lucia	1,983	\$12,778				
					Saint Vincent	1,282	\$10,047				
			Suriname	10,931	\$5,981						
	HIC	Non-Gavi	Transitioned from Gavi	Cuba	97,930	N/A					
			Antigua	1,107	\$19,455						
			Aruba	760	\$34,178						
			Bahamas	4,677	\$36,688						
			Barbados	2,979	\$22,407						
			Bermuda	463	N/A						
			Canada	384,053	\$54,234						
			Cayman Islands	653	N/A						
			Chile	222,372	\$18,511						
			Panama	75,983	\$18,216						
			St. Kitts and Nevis	548	\$18,523						
			Trinidad	16,636	\$20,650						
			Turks and Caicos Islands	548	N/A						
			Uruguay	35,408	\$22,586						
			USA	3,752,648	\$82,132						
			Transitioned from Gavi	Guyana	15,471	\$27,642					
			EMR	LIC	Eligible	Afghanistan	1,416,827	N/A			
						Somalia	741,484	\$572			
Sudan	1,524,051	\$858									
Syria	516,034	N/A									
Yemen	977,616	\$606									
LMIC	Non-Gavi	Pakistan				6,226,056	N/A				
		Egypt				2,416,615	\$3,400				
		Iran				1,121,079	\$4,449				
		Jordan				235,997	\$5,331				
		Lebanon		70,078	N/A						
		Morocco		625,505	\$3,936						
		Tunisia		184,094	\$4,178						
		UMIC		Non-Gavi	Transitioning	Djibouti	23,911	\$4,106			
					Iraq	1,199,426	\$6,248				
						Kosovo	18,497	\$6,041			
				Libya	114,866	\$6,989					



WHO Region	WB Status	Gavi Eligibility	Country Name	Birth Cohort	GDP Per Capita (USD)			
					0K	50K	100K	150K
EMR	UMIC	Non-Gavi	West Bank and Gaza	145,227	\$3,569			
			Bahrain	16,488	\$29,065			
	HIC	Non-Gavi	Kuwait	39,333	\$33,194			
			Oman	78,077	\$22,251			
			Qatar	23,592	\$87,093			
			Saudi Arabia	601,319	\$29,893			
			UAE	90,745	\$50,698			
EUR	LMIC	Eligible	Kyrgyz Republic	149,631	\$1,815			
			Tajikistan	250,639	\$1,398			
			Ukraine	223,622	N/A			
			Uzbekistan	735,812	\$2,818			
	UMIC	Non-Gavi	Belarus	85,131	\$8,172			
			Bulgaria	54,662	\$15,770			
			Kazakhstan	389,077	\$12,866			
			Montenegro	6,720	\$12,155			
			North Macedonia	19,562	\$8,021			
			Russia	1,357,806	\$14,821			
			Serbia	64,226	\$11,863			
			Turkiye	1,192,397	\$12,461			
			Transitioned from Gavi	Albania	28,127	\$7,316		
				Armenia	30,854	\$8,479		
				Azerbaijan	117,681	\$7,121		
				Bosnia	26,036	\$8,669		
				Georgia	46,672	\$8,173		
				Moldova	45,296	\$6,927		
				Turkmenistan	125,984	\$14,324		
				HIC	Non-Gavi	Andorra	567	\$45,364
	Austria	83,904	\$58,156					
	Belgium	116,922	\$54,771					
	Croatia	33,212	\$21,649					
	Cyprus	12,329	\$35,104					
	Czech Rep.	99,169	\$33,745					
	Denmark	65,610	\$71,019					
	Estonia	12,898	\$33,486					
	Finland	47,464	\$55,958					
	France	662,915	\$45,730					
	Germany	753,377	\$53,007					
	Greece	75,626	\$23,539					
	Hungary	100,185	\$20,917					
Iceland	4,545	\$80,393						
Ireland	56,339	\$121,010						
Israel	174,605	\$57,065						
Italy	405,239	\$37,646						
Latvia	15,610	\$26,678						
Liechtenstein	360	N/A						
Lithuania	25,057	\$30,776						
Luxembourg	6,799	\$134,990						
Malta	4,843	\$38,906						
Netherlands	182,858	\$63,912						
Norway	55,081	\$102,367						
Poland	396,475	\$21,316						

WHO Region	WB Status	Gavi Eligibility	Country Name	Birth Cohort	GDP Per Capita (USD)					
					0K	50K	100K	150K		
EUR	HIC	Non-Gavi	Portugal	79,214		\$26,993				
			Romania	205,008		\$20,176				
			San Marino	200		\$53,909				
			Slovak Republic	58,871		\$24,943				
			Slovenia	18,384		\$34,090				
			Spain	350,169		\$32,514				
			Sweden	114,026		\$56,416				
			Switzerland	86,287		\$103,246				
			UK	678,980		\$49,321				
SEAR	LMIC	Eligible	Myanmar	880,810		\$1,236				
			Nepal	599,982		\$1,492				
			Timor-Leste	32,185		\$1,409				
	Transitioned from Gavi	Bhutan	9,468		\$3,663					
		India	22,537,167		\$2,803					
		Sri Lanka	294,130		N/A					
	UMIC	Transitioning	Bangladesh	2,928,972		\$2,729				
			Maldives	6,590		\$18,843				
		Non-Gavi	Thailand	615,994		\$8,781				
			Indonesia	4,355,180		\$5,389				
WPR	LMIC	Eligible	Cambodia	306,229		\$2,019				
			Micronesia	2,348		\$4,545				
		Non-Gavi	Philippines	2,458,117		\$4,167				
			Samoa	5,918		\$4,602				
			Vanuatu	9,409		\$3,293				
		Transitioned from Gavi	Kiribati	3,374		\$2,080				
			Mongolia	65,933		\$4,978				
			Viet Nam	1,389,491		\$4,925				
			Laos	155,874		\$1,814				
		Transitioning	Papua New Guinea	247,124		\$3,518				
	Solomon Islands		21,165		\$2,377					
	UMIC	Non-Gavi	China	10,562,210		\$14,801				
			Fiji	17,284		\$6,639				
			Malaysia	504,437		\$14,251				
			Marshall Islands	743		\$5,336				
			Palau	261		\$16,871				
			Tonga	2,422		\$5,698				
			Tuvalu	255		\$6,369				
			HIC	Non-Gavi	Australia	303,934		\$64,603		
					Brunei	5,878		\$35,999		
Japan					815,119		\$36,493			
Macao SAR, China	7,110				\$62,041					
Nauru	322				\$12,151					
New Zealand	63,984				\$48,343					
Singapore	43,100				\$94,595					
South Korea	289,154				\$34,807					



Gavi-eligible Countries with Lowest Vaccine Coverage

FIGURE 1.2

The coverage values for four immunization programs are presented for the 15 Gavi-eligible countries with the lowest coverage rates. The countries are ordered by coverage from lowest to highest.

Gavi DTP3 and MCV1 coverage targets are shown as reference lines. Gavi eligibility is based on the forecasted 2024 status.

Source: WUENIC 2022 data, Gavi Coverage Targets

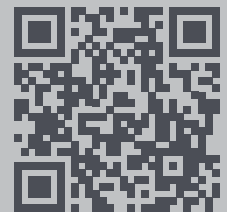
■ Eligible
■ Transitioning

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2.0 DEMAND

This section provides a forecast of global public demand for vaccines for 2022 through 2033. The forecast includes known new vaccine introductions and product replacements. It does not include demand for future vaccines, e.g., GBS, second-generation dengue, etc.

GVMM's Countries Module (see Section 1) and Demand Module are the data sources for this section. The Demand Module combines data from WHO/UNICEF JRF, MI4A Vaccine Purchase Data, Gavi SDFs, UNPD WPP and other sources to estimate historical and future demand for all vaccines in public schedules for all countries in the world.

WHO Recommended Childhood Immunization Schedule

FIGURE 2.1

This table summarizes the WHO vaccination recommendations for children. The ages/ intervals cited are for the development of country specific schedules and are not for health workers.

Source: WHO, *Recommended Routine Immunizations for Children, Summary Table 2, March 2023.* https://cdn.who.int/media/docs/default-source/immunization/immunization_schedules/table_2_feb_2023_english.pdf

Legend

Recommended earliest range for vaccination
Range recommended for catch up campaign
No Recommendation / Not Applicable
Booster

Notes

- 1 With DTPCV1
- 2 With DTPCV2
- 3 With DTPCV3
- 4 In combination with MCV, see source; no max age specified
- 5 IPV catch-up for those who missed due to stock-outs in 2016-2019; no max age specified
- 6 IPV booster (6 months after 3rd dose) is needed when 1st dose given at < 8 weeks
- 7 3 boosters: 1 at 1-2 years (DTP-containing vaccine), 2 at 4-7 years (Td/DT containing vaccine), 3 at 9-15 years (Td)
- 8 3rd (if required by product, or if mixed products)
- 9 High-risk setting
- 10 9 months is for high-risk settings, other settings should administer MCV1 at 12 months
- 11 2nd (15-18 months of age); catch-up no max age specified
- 12 Females only (1st: 9-14 years, 2nd: 6 months-1 year after 1st.) Other populations may also be vaccinated (see source)

Vaccine		Birth	1 month	2 months	3 months	4 months	5 months	6 months	7 months	8 months	9 months	12 months	Older	Booster Dose	
Recommendations for all children															
BCG		1st	Recommended for high-risk settings, see considerations in source; no max age specified												
Hepatitis B	Option 1	1st	2nd ¹	3rd ²	Catch-up priority to younger age groups										
	Option 2 (high-risk settings)	1st	2nd ¹	3rd ²	4th	Catch-up priority to younger age groups									
Polio	bOPV + IPV (preferred)		1st	2nd ²	3rd ³ + 1st							2nd ⁴	See Note ⁵		
	bOPV + IPV (early)		1st + 1st ¹	2nd ²	3rd ³ + 2nd ³								See Note ⁵		
	bOPV birth dose + IPV (polio-endemic and high-risk setting)	Zero	1st	2nd ²	3rd ³ + 1st							2nd ⁴	See Note ⁵		
	IPV / bOPV Sequential			1st	2nd	1st	2nd								
	IPV-only		1st	2nd	3rd									IPV booster ⁶	
	Alternative IPV-only (fractional permitted)				1st							2nd ⁴			
DTP-containing vaccine			1st	2nd	3rd									3 boosters ⁷	
Haemophilus influenzae type b	Option 1		1st	2nd ²	3rd ³	Catch-up, preferably children <= 5 years. If child >= 1 year, only 1 recommended									
	Option 2		1st	2nd ²	3rd ^{3*}	Catch-up, preferably children <= 5 years. If child >= 1 year, only 1 recommended								>= 6 months after last dose	
	Option 3		1st		2nd	Catch-up, preferably children <= 5 years. If child >= 1 year, only 1 recommended									
Pneumococcal (Conjugate)	Option 1		1st	2nd	3rd	Catch-up; no max age specified. If child >= 2 years, only 1 recommended									
	Option 2		1st		2nd	Catch-up; no max age specified. If child >= 2 years, only 1 recommended								9-18 months	
Rotavirus			1st ¹	2nd ²	3rd ^{3,8}	Catch-up, up to age 2									
Measles								Optional Zero ⁹			1st ¹⁰	2nd ¹¹			
Rubella											1st ⁴		See Note ⁴		
HPV													Females only ¹²		
Recommendations for children residing in certain regions															
Japanese Encephalitis	Inactivated Vero cell-derived (high-risk groups)							1st	2nd	preferably children < 15 years; no max age specified					
	Live attenuated									1st	preferably children < 15 years; no max age specified				
	Live recombinant										1st	preferably children < 15 years; no max age specified			

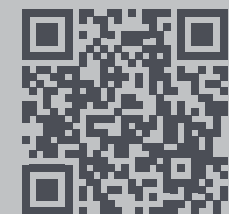
Vaccine	Birth	1 month	2 months	3 months	4 months	5 months	6 months	7 months	8 months	9 months	12 months	Older	Booster Dose
Recommendations for children residing in certain regions (continued)													
Yellow Fever										1st ⁴		See Note ¹³	
Tick-Borne Encephalitis	FSME-Immun and Encepur											See Note ¹⁴	At least 1 every 3 years (if at risk)
	TBE-Moscow and EnceVir											See Note ¹⁵	
Recommendations for children in some high-risk populations													
Typhoid	TCV (Typbar preferred)											See Note ¹⁶	
	Vi PS											See Note ¹⁷	Every 3 years
	Ty21a											See Note ¹⁸	Every 3-7 years
Cholera	Dukoral (WC-rBS)											See Note ¹⁹	Every 6 months ²⁰
	Shanchol, Euvchol and mORCVAX										1st + 2nd ²¹		After 2 years
Meningococcal	MenA conjugate (preferred)										1st ²²		
	MenC conjugate		1st									2nd ²³	After 1 year
	Quadrivalent conjugate (A,C,W,Y)										1st ²⁴		
Hepatitis A	Inactivated										1st ²⁵ + 2nd		
	Live attenuated											1st ²⁶	
Rabies	As required (see considerations in source): 1st + 2nd (7 days after 1st); no max age specified												
Dengue (CYD-TDV)												1st ²⁹ + 2nd + 3rd	
Malaria (RTS,S)						1st	2nd	3rd		If optimal for programmatic reasons		4th ³⁰ + 5th	
Recommendations for children receiving vaccinations from immunization programs with certain characteristics													
Mumps												1st ³¹ + 2nd	
Seasonal influenza (inactivated tri- and quadrivalent)						1st	2nd (only if < 9 years)					Only 1 if >= 9 years; no max age specified	Annually
Varicella												1st (1 year-18 months) + 2nd (1-3 months after 1st)	

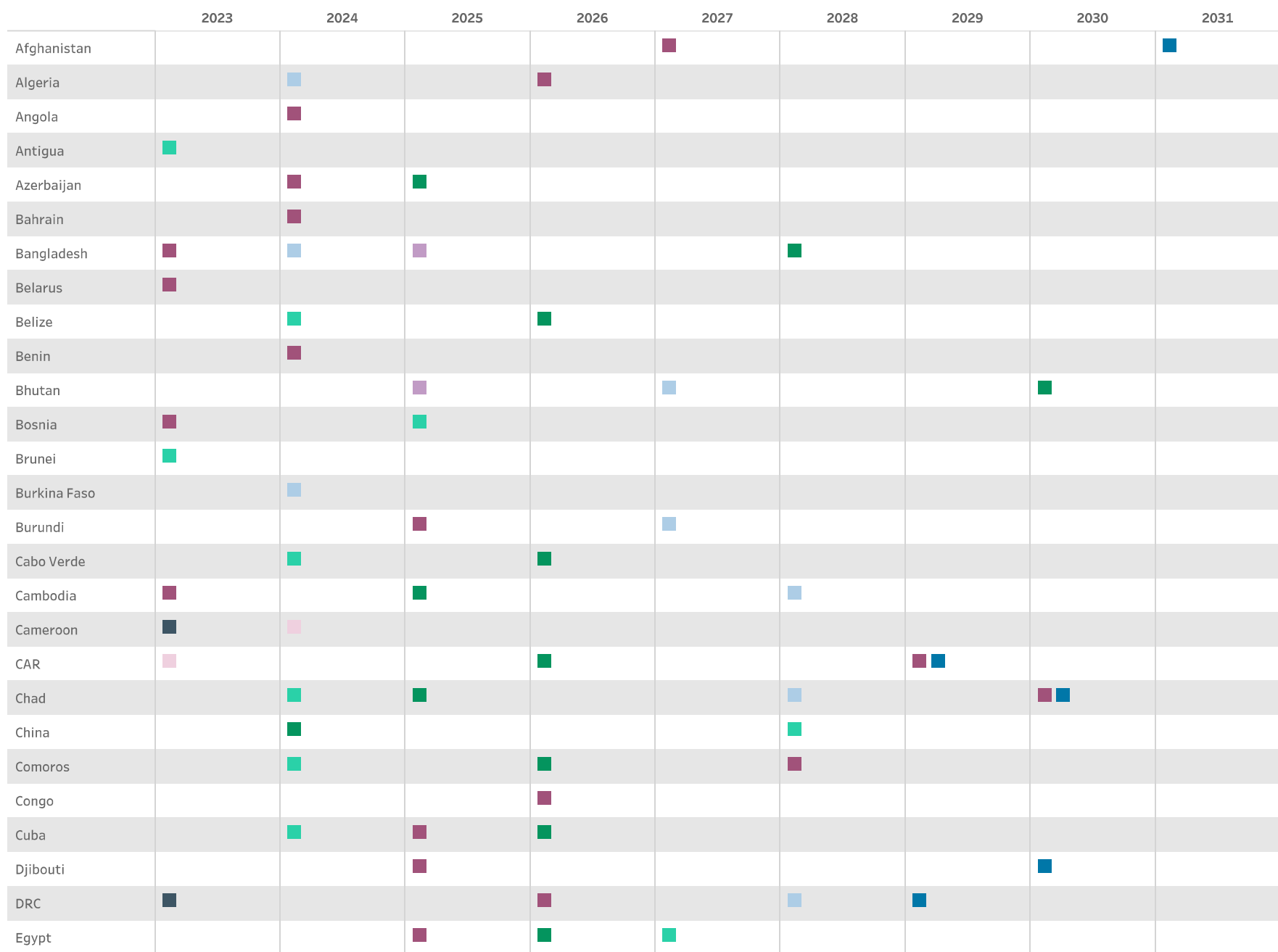
- 13 See source; in high-risk settings; no max age specified
- 14 1st: >= 1 year; no max age specified
2nd: 1-3 months after 1st
3rd: 5-12 months after 2nd
- 15 1st: >= 3 years; no max age specified
2nd: 1-7 months after 1st
3rd: 1 year after 2nd
- 16 1st: > 6 months; up to 45 years
Catch-up: <= 15 years recommended when feasible. Also during outbreaks; no max age specified
- 17 1st: >= 2 years; no max age specified
- 18 1st: >= 5 years; no max age specified
2nd: 1 day after 1st
3rd: 1 day after 2nd
4th: 1 day after 3rd
- 19 If 2-5 years:
1st dose: >= 2 years
2nd dose: >= 7 days < 6 weeks after 1st
3rd dose: >= 7 days < 6 weeks after 2nd.
If >= 6 years (no max age specified):
1st: >= 6 years
2nd: >= 1-6 weeks after 1st
- 20 Every 6 months if 2-5 years
Every 2 years if >= 6 years
- 21 2nd dose 14 days after 1st; no max age specified
- 22 9-18 months
23 2nd (if 1st administered before 1 year)
- 24 1st (>= 1 year); no max age specified
- 25 1st (9 months-2 years) + 2nd (3 months after 1st)
- 26 1st (>= 2 years); no max age specified
- 27 1st (> 1 year) + 2nd (6-18 months after 1st; max 4-5 years)
- 28 1st (18 months); no max age specified
- 29 1st (>= 9 years); no max age specified
2nd (6 months after 1st)
3rd (6 months after 2nd)
- 30 4th (1 year-18 months after 3rd) + 5th (in high risk settings, 1 year after 4th)
- 31 1st (1 year-18 months, with MCV) + 2nd (1 month prior to school entry)

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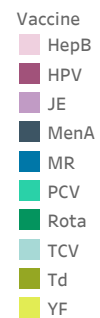
Planned and Projected Vaccine Introductions

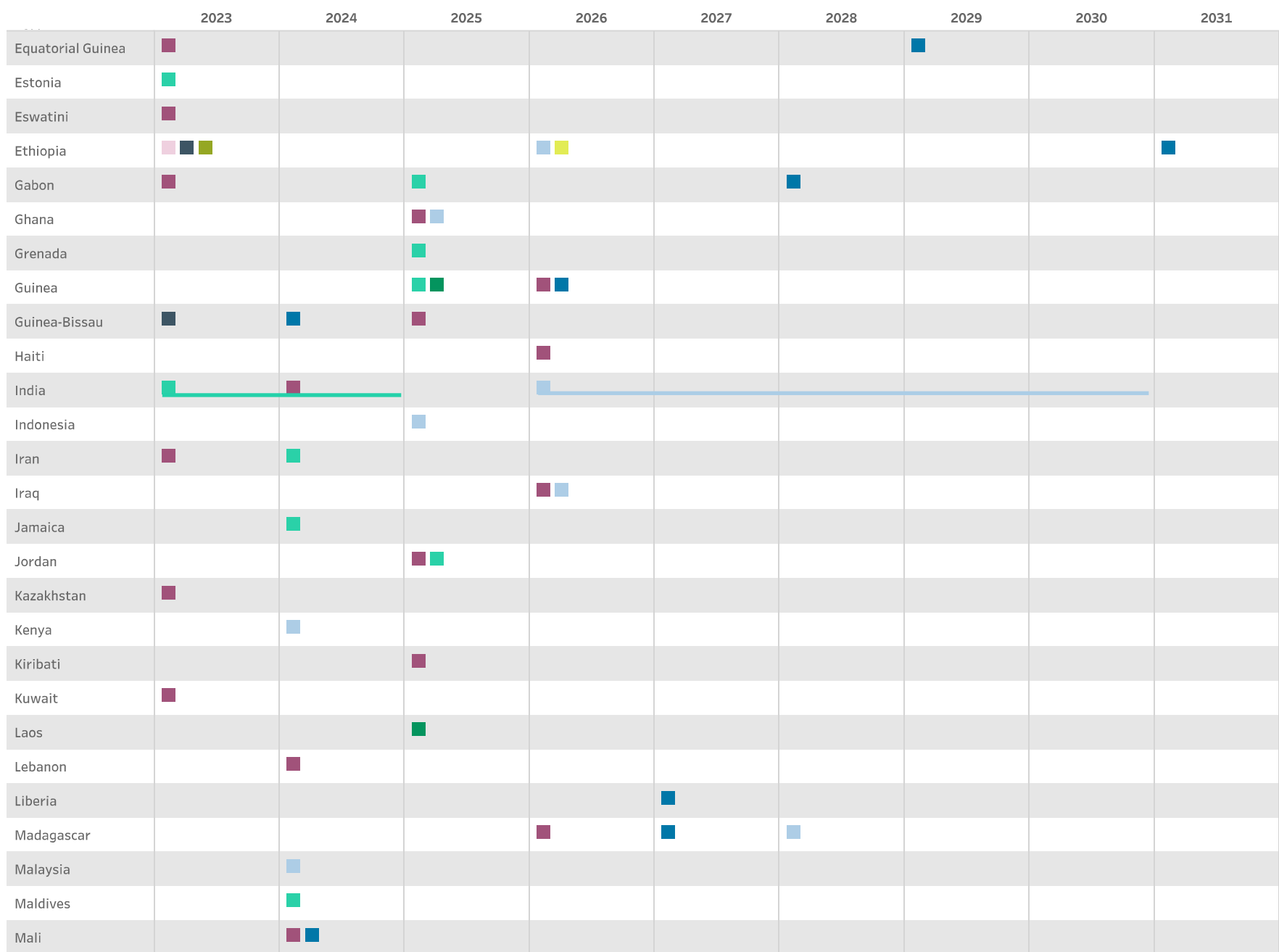
FIGURE 2.2

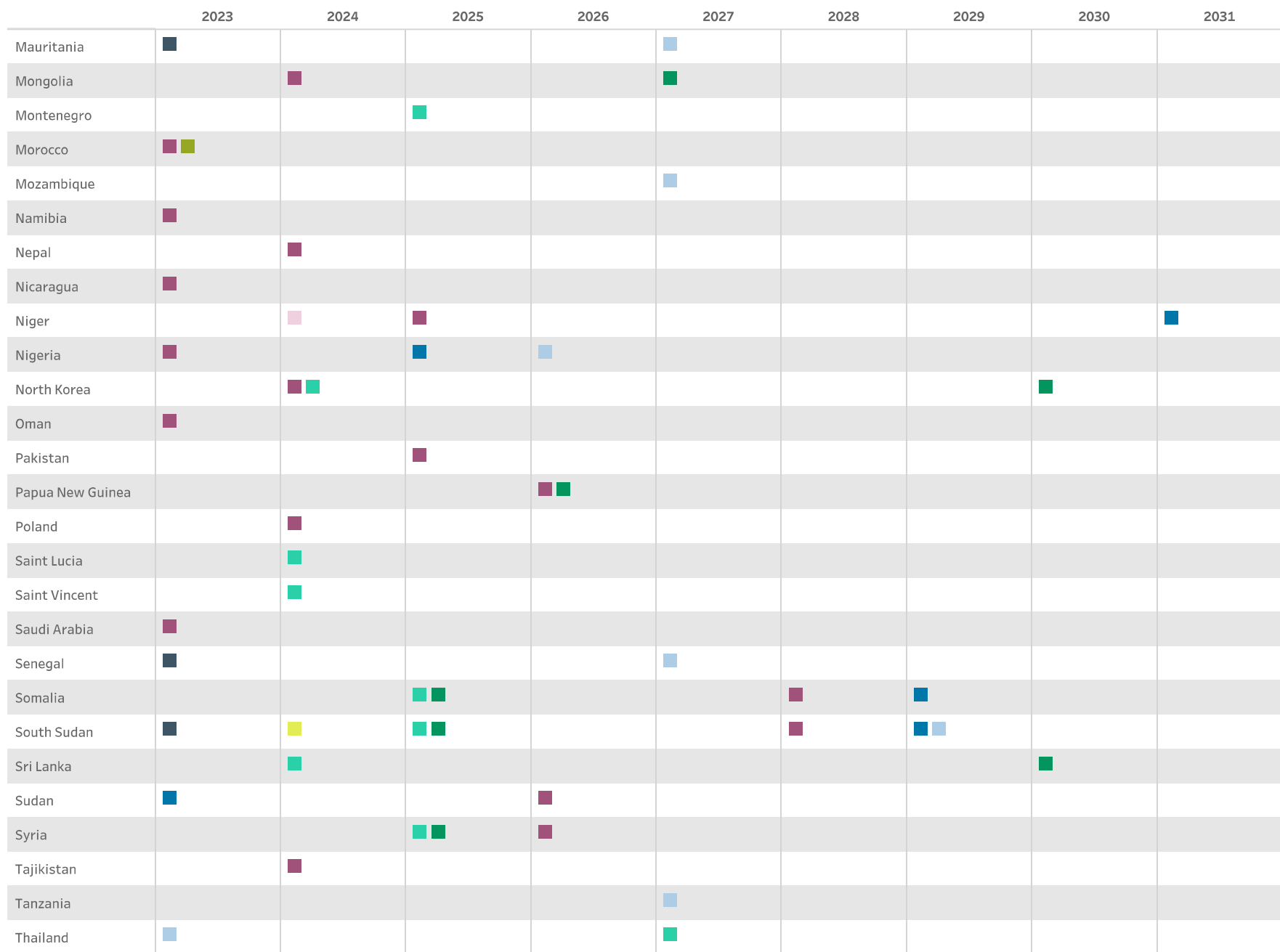
92 countries have planned or are projected to make new routine vaccine introductions.

GVMM Demand Module provides introduction year at the state level for select vaccines for India. Note lines showing introduction span.

Source: GVMM, January 2024, based on country planning data (WHO JRF, MI4A), Gavi SDFs and other sources.





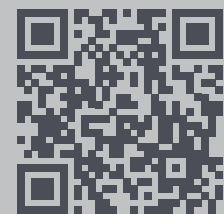


	2023	2024	2025	2026	2027	2028	2029	2030	2031
Timor-Leste		■							
Togo	■ ■					■			
Tunisia		■					■		
Turkiye	■								
Uganda	■								
Ukraine		■	■			■			
Venezuela				■					
Viet Nam		■	■	■					
Yemen						■			
Zambia			■						
Zimbabwe	■								

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Forecasted Routine Global Demand by Vaccine Group

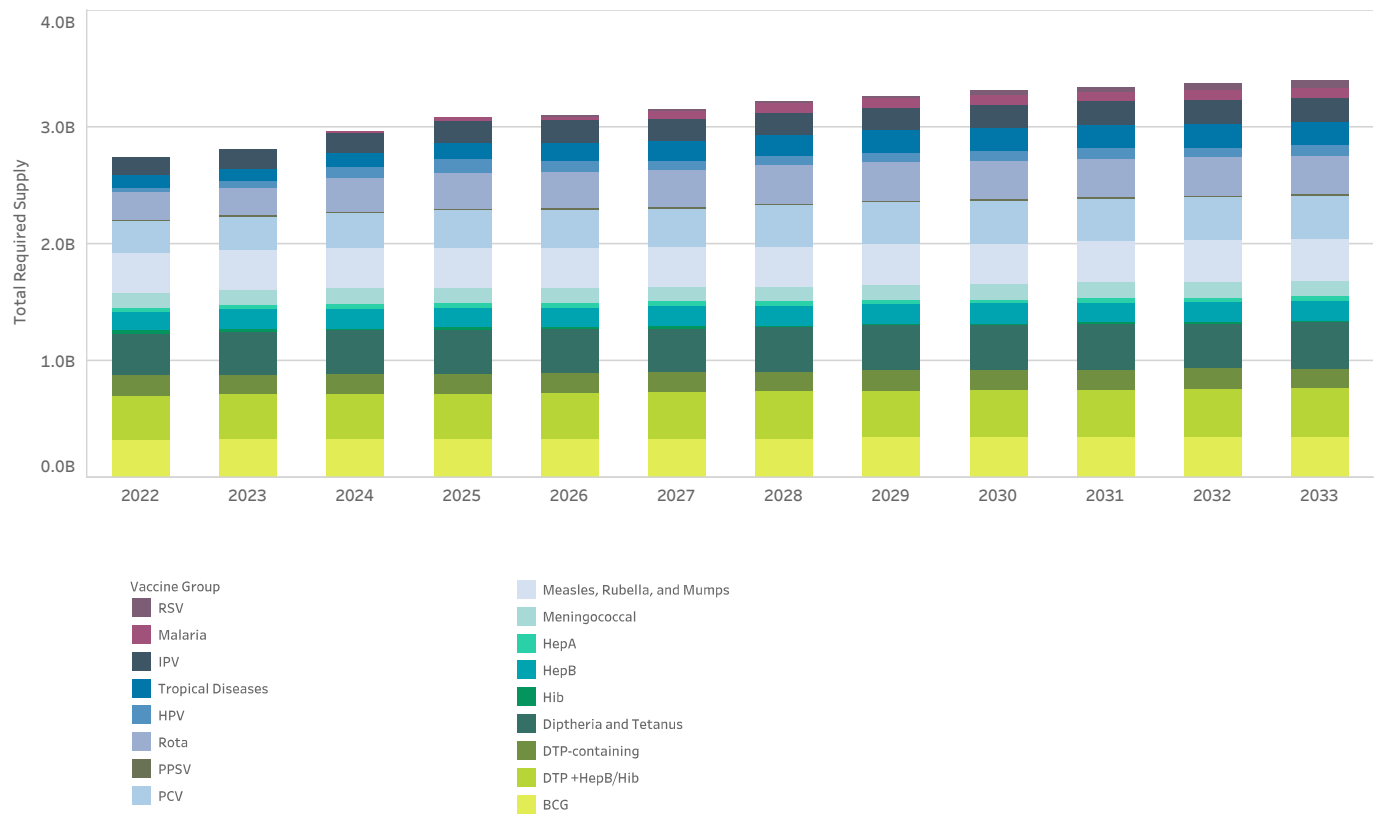
FIGURE 2.3

This exhibit shows annual global demand for routine immunization in doses.

Demand for most traditional vaccines is stable over time (e.g. BCG, DT and DTP-containing). Demand for newer (e.g. PCV, Rota and HPV) and tropical disease vaccines (e.g. Typhoid and JE) is increasing. RSV and Malaria are included as new additions to this forecast.

Demand for each vaccine by country is available from the GVMM.

Source: GVMM, January 2024



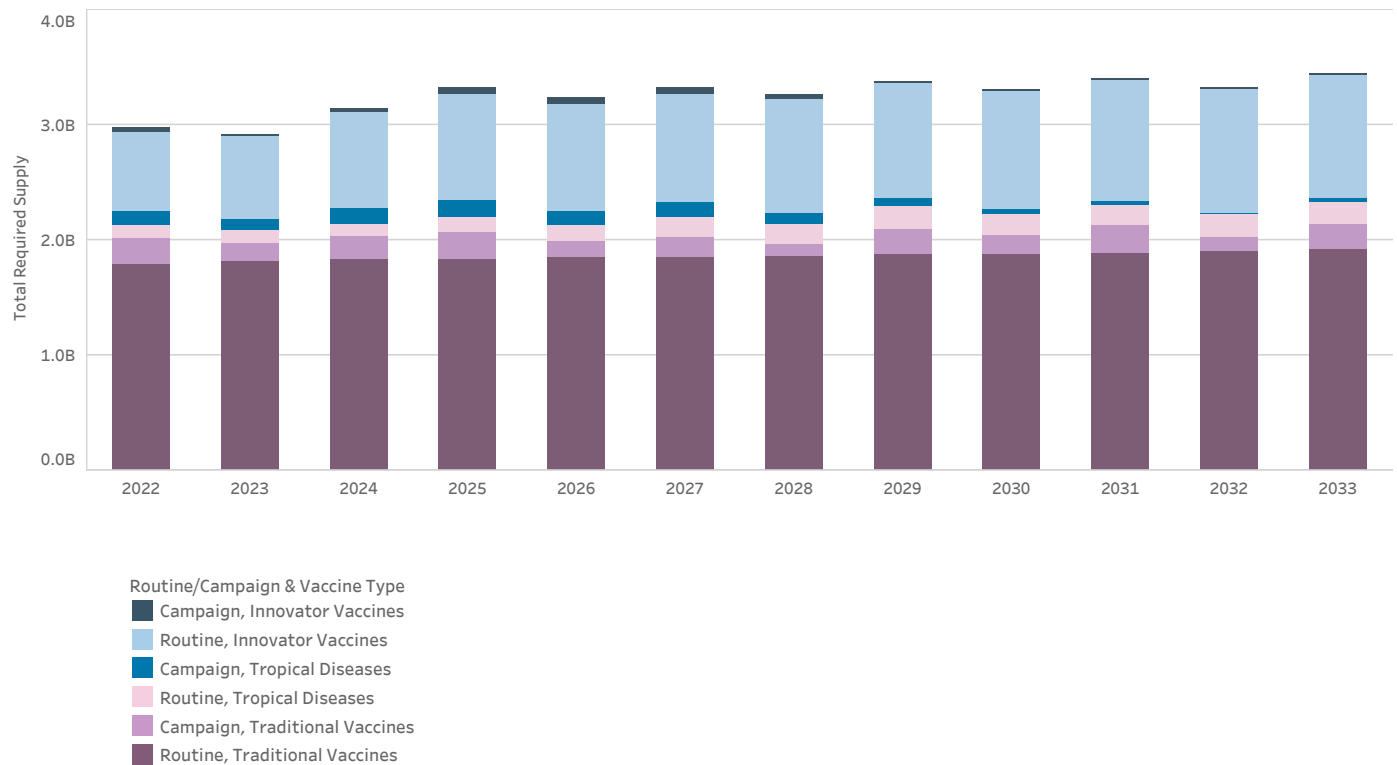
Forecasted Global Demand by Routine/Campaign and Vaccine Type

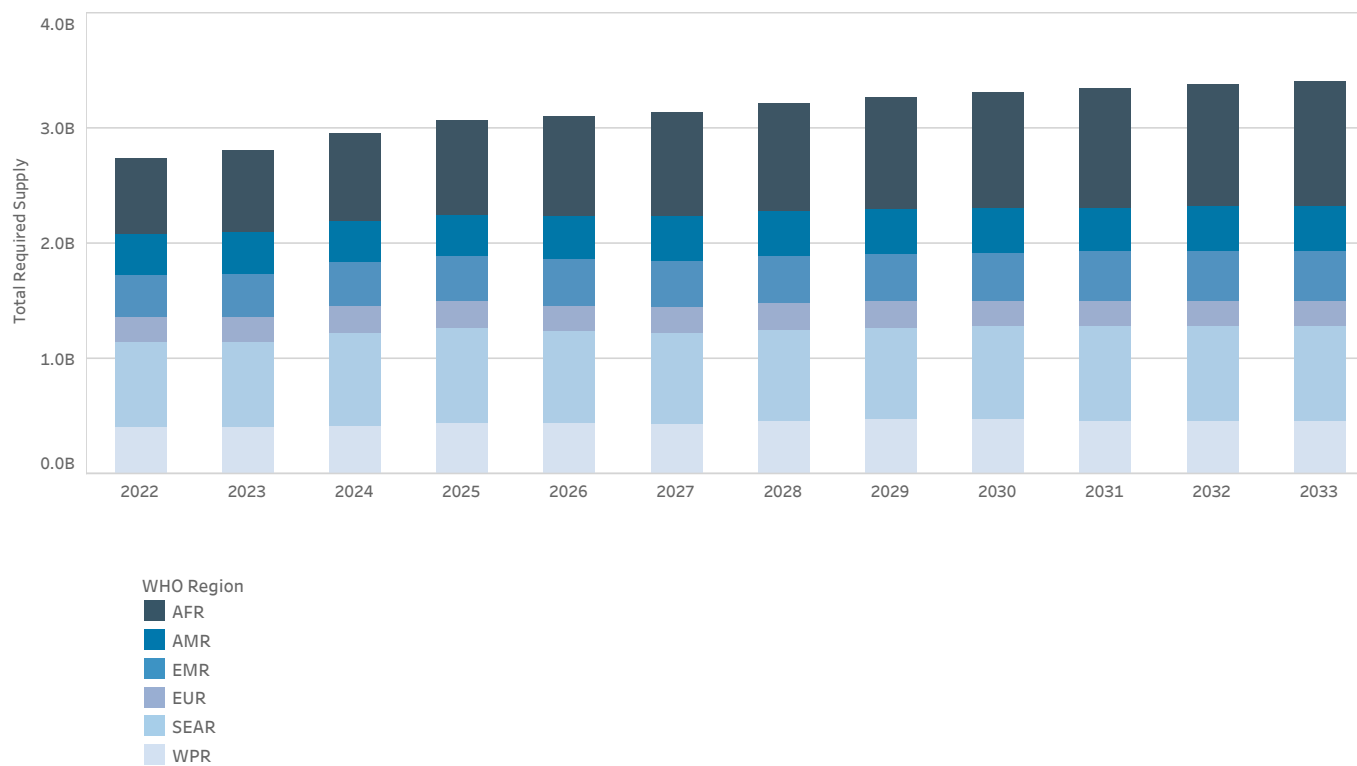
FIGURE 2.4

This exhibit shows global demand for routine immunization and campaigns / SIAs in doses per year.

Campaigns include HPV, JE, MCV, Meningitis, PCV, TCV, YF, RSV, and WRA (TT, Td) campaigns. Information about the timing and scope of campaigns is more uncertain than data for routine immunization.

Source: GVMM, January 2024





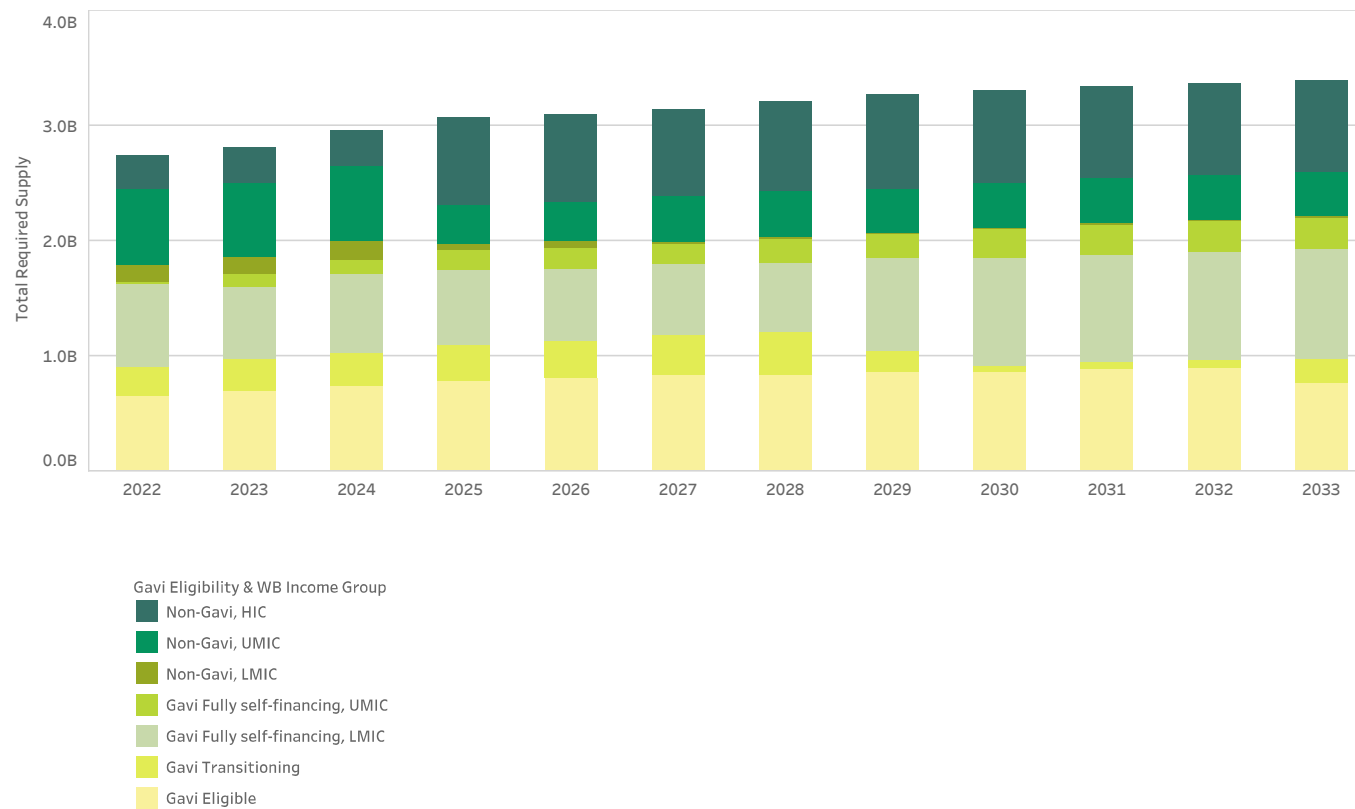
Forecasted Routine Global Demand by WHO Region
FIGURE 2.5

This exhibit shows routine immunization demand by WHO region.

AMR and EUR demand is steady. New vaccine introductions, improvements in immunization coverage and increasing population size drive the considerable increase in demand in AFR.

The exhibit excludes OPV routine immunization doses.

Source: GVMM, January 2024



Forecasted Routine Global Demand by Gavi Eligibility and WB Income Group
FIGURE 2.6

This exhibit shows routine immunization demand by Gavi eligibility and World Bank country income group.

Gavi-supported demand (eligible and transitioning countries) reduces to as low as 20 percent of global requirements by 2030 as countries graduate, notwithstanding new additions to the Gavi vaccine portfolio.

The exhibit excludes OPV routine immunization doses.

Source: GVMM, January 2024

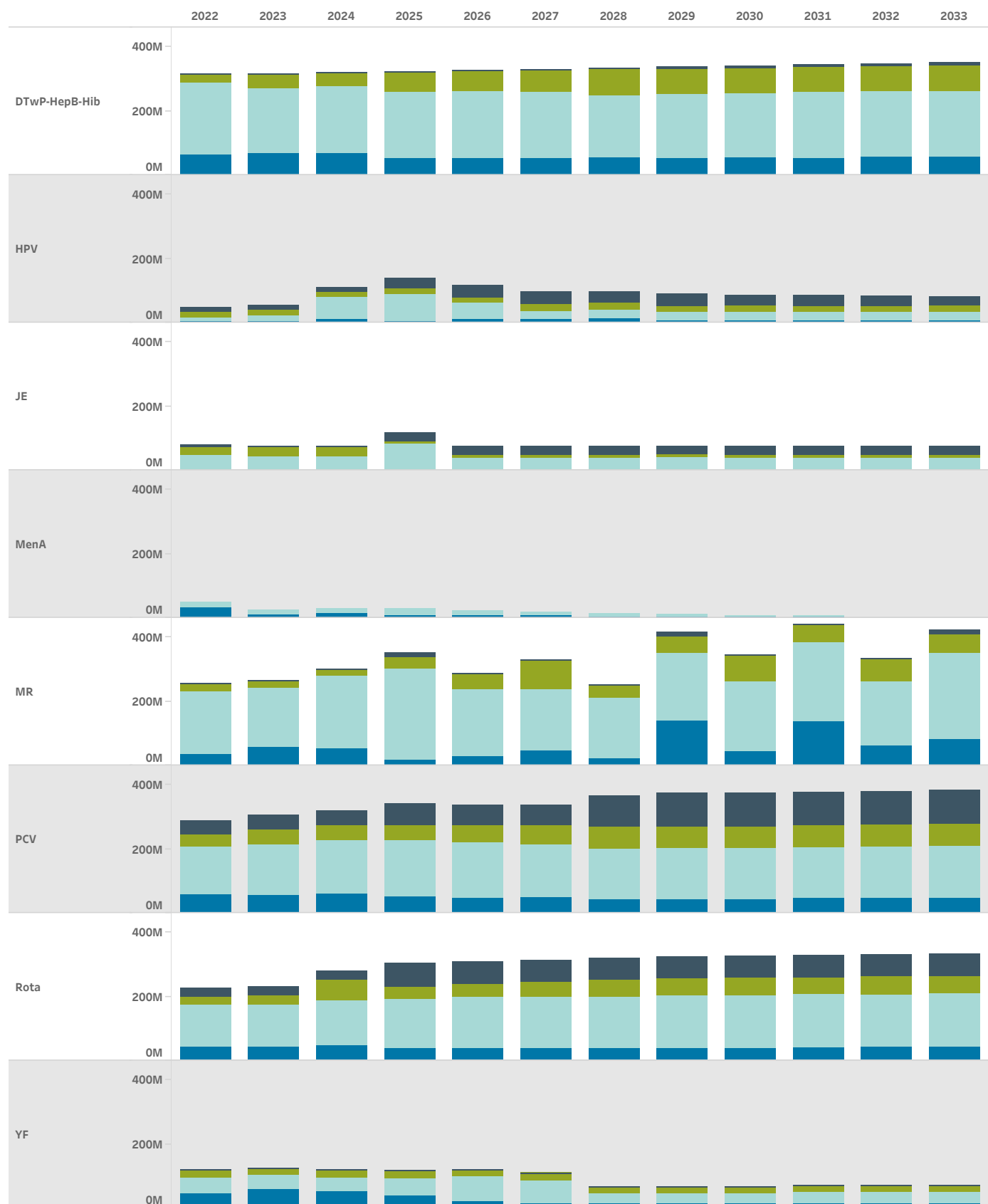
Global Demand by World Bank Income Group for Select Gavi-supported Vaccines

FIGURE 2.7

This exhibit shows relative demand (chart) and detailed demand (corresponding table) in millions of doses per year from 2022 through 2033 for key vaccines by World Bank country income group.

Source: GVM, January 2024

WB Status

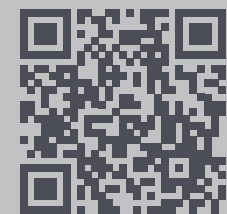


		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
DTwP-HepB-Hib	HIC	0.7	0.7	0.7	4.0	4.1	4.1	4.1	7.7	7.6	7.6	7.6	7.6
	UMIC	28.1	45.0	43.3	58.7	58.9	69.3	81.6	78.3	78.5	78.6	78.8	78.9
	LMIC	222.7	205.0	207.8	208.1	212.6	204.8	195.1	200.2	201.9	203.5	204.9	206.0
	LIC	64.5	66.2	68.5	52.7	51.6	53.0	54.0	52.2	53.6	54.9	56.1	57.2
HPV	HIC	14.9	15.1	15.8	34.8	38.5	37.6	38.0	37.2	35.1	33.3	31.4	30.8
	UMIC	14.5	16.4	17.0	16.0	17.5	20.8	20.5	19.7	19.4	19.2	19.1	19.0
	LMIC	10.4	17.6	67.5	86.9	51.9	24.9	24.5	24.0	24.1	24.4	24.8	25.2
	LIC	5.3	5.2	10.1	1.9	9.5	11.6	13.8	6.9	8.1	7.2	7.4	7.5
JE	HIC	4.7	4.6	4.6	27.6	27.3	27.0	26.8	26.6	26.4	26.3	26.2	26.1
	UMIC	27.4	26.8	25.7	7.9	7.9	8.2	9.9	9.9	9.9	9.9	9.9	9.9
	LMIC	45.2	44.3	44.2	82.3	39.7	39.5	37.8	38.1	37.9	37.8	37.6	37.4
MenA	LMIC	15.7	12.7	14.1	22.1	13.3	11.4	10.4	9.3	5.4	5.5	0.5	0.2
	LIC	33.6	11.0	15.6	6.9	6.8	7.6	3.2	3.0	3.0	3.1	0.2	0.2
MR	HIC	1.8	1.8	2.1	14.9	5.2	3.6	2.8	14.6	5.7	2.5	3.8	14.4
	UMIC	22.2	21.6	18.7	35.6	45.3	87.8	37.0	51.6	77.2	54.6	67.5	58.6
	LMIC	197.7	183.2	226.9	282.9	208.7	192.8	189.5	212.8	220.0	244.8	201.9	269.0
	LIC	34.6	58.2	54.9	18.5	29.9	46.2	20.9	137.5	41.7	137.5	61.9	80.9
PCV	HIC	43.8	45.1	45.2	65.4	65.3	65.1	95.1	107.0	105.1	104.8	104.6	104.6
	UMIC	39.3	44.2	48.0	48.1	51.5	60.2	70.7	67.3	67.5	67.7	67.9	68.0
	LMIC	150.4	157.5	166.2	175.6	173.9	164.6	154.3	158.7	159.8	161.1	162.2	163.2
	LIC	55.2	57.3	59.6	50.5	46.8	47.9	43.9	42.2	43.3	44.4	45.3	46.2
Rota	HIC	26.3	27.7	27.8	72.1	70.2	69.8	69.6	69.3	69.1	68.9	68.9	69.0
	UMIC	27.7	28.7	65.3	39.2	39.3	45.0	52.8	54.6	55.0	55.3	55.4	55.4
	LMIC	129.9	131.2	142.4	154.9	161.8	159.2	158.3	162.5	163.9	165.0	166.1	167.1
	LIC	42.9	43.2	45.8	38.1	38.4	39.3	40.1	38.2	39.1	40.1	40.9	41.6
YF	HIC	0.0	0.1	0.1	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.5	0.5
	UMIC	25.2	23.3	24.4	23.1	22.2	22.0	21.8	21.7	21.6	21.6	21.5	21.4
	LMIC	49.5	42.4	42.7	53.1	78.1	72.8	30.4	32.4	33.1	33.8	34.5	35.2
	LIC	44.8	59.5	52.4	39.9	20.9	13.9	14.1	13.3	13.7	14.2	14.6	15.0

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3.0 SUPPLY

This section provides an overview of the status of licensed vaccines and candidates in development globally.

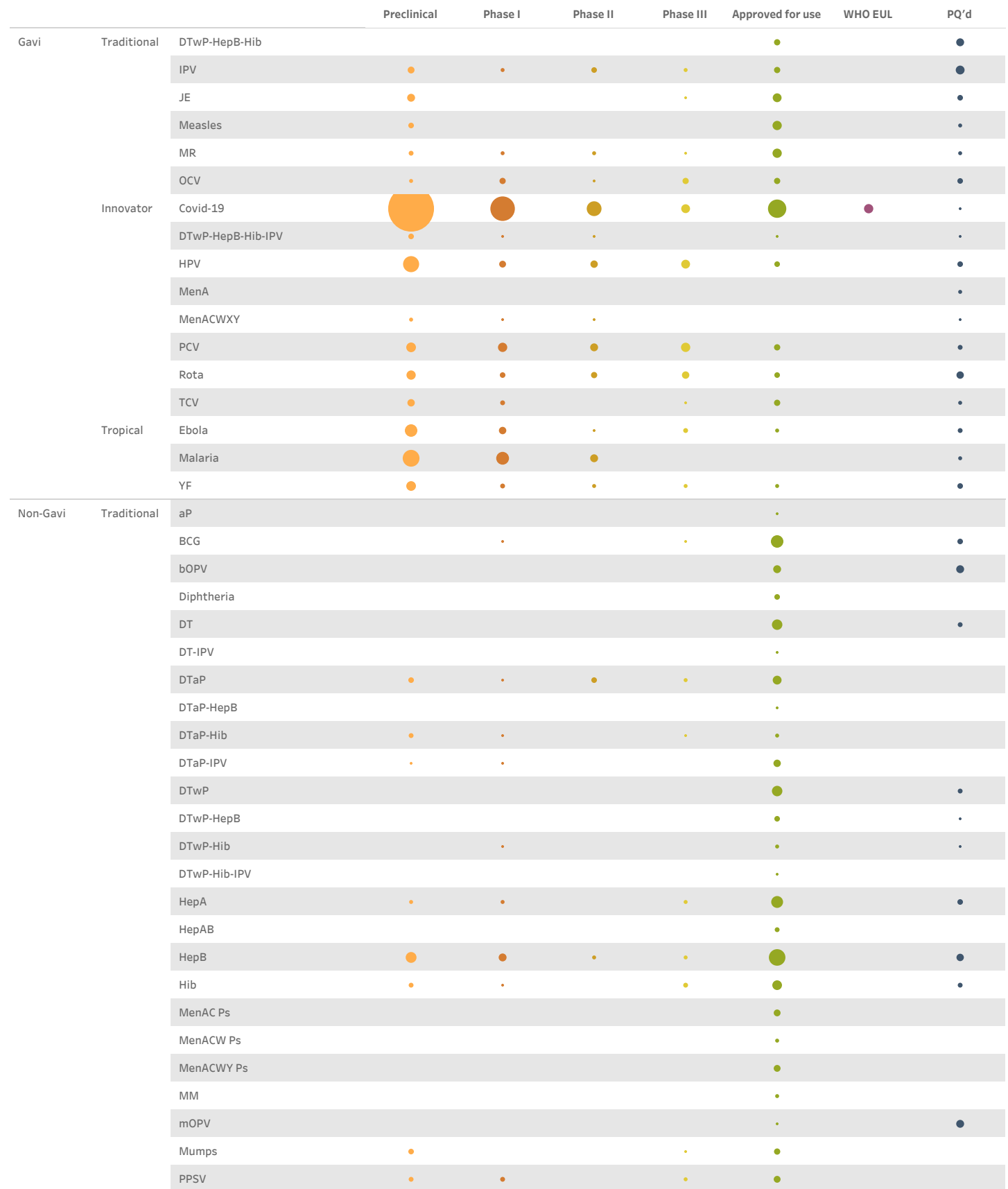
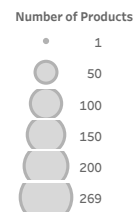
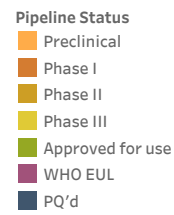
Vaccine Pipeline Size

FIGURE 3.1

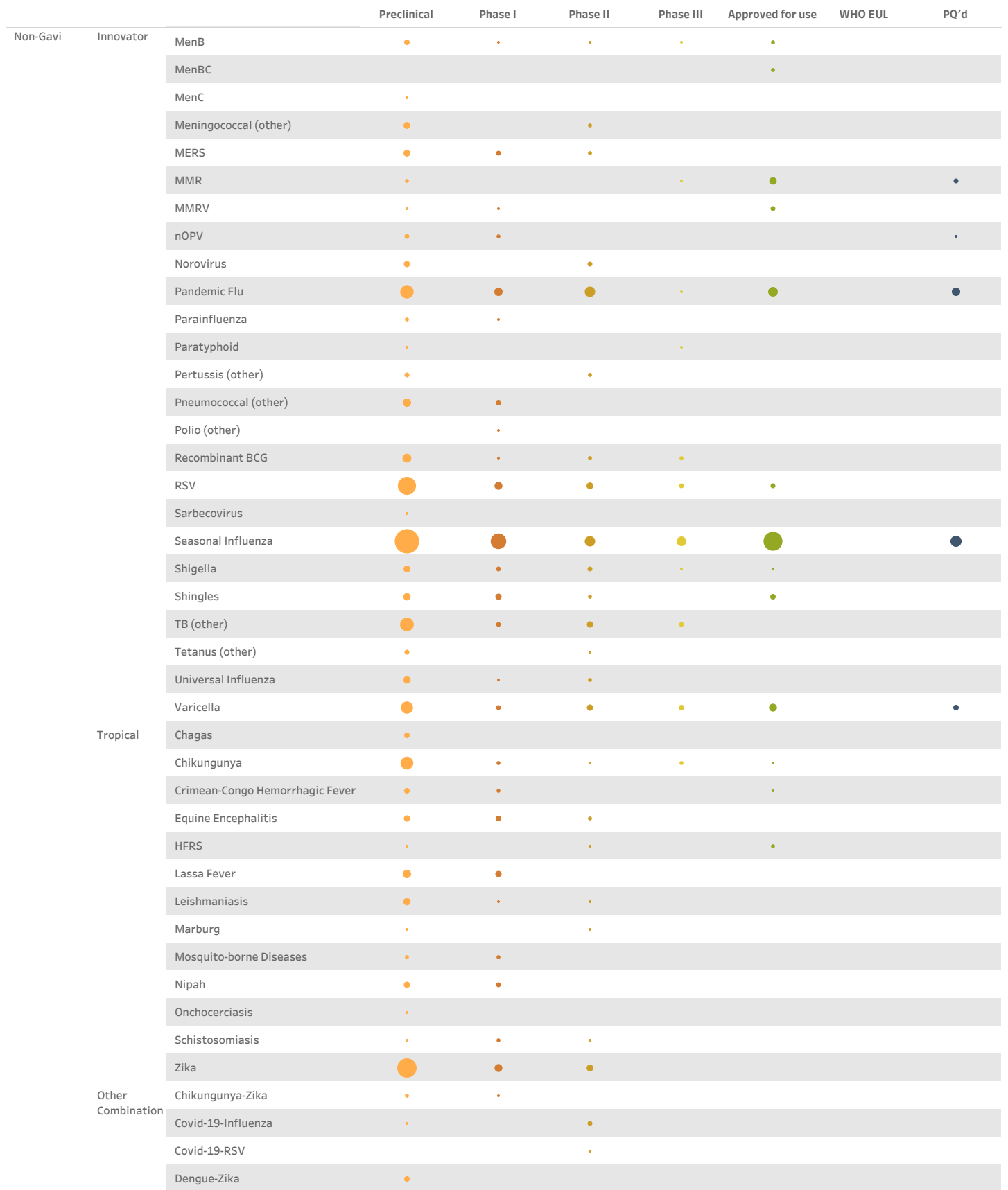
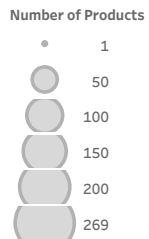
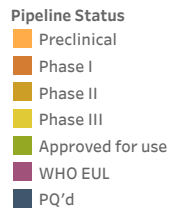
This exhibit shows the number of companies in each stage of the vaccine development and licensure pipeline.

The vaccines are separated by Gavi and non-Gavi vaccines, and further categorized into traditional, innovator, tropical and other vaccines.

Source: GVM, January 2024



		Preclinical	Phase I	Phase II	Phase III	Approved for use	WHO EUL	PQ'd
Non-Gavi	Traditional	Rabies	●	●	●	●	●	●
		Rubella				●	●	●
		Smallpox/Mpox	●	●		●	●	
		Staphylococcus aureus		●		●		
		TBE	●				●	
		Td			●		●	●
		Td-IPV					●	
		Tdap	●		●		●	●
		Tdap-IPV					●	
		tOPV					●	●
		TT	●	●			●	●
		Typhoid (live attenuated)					●	
Innovator	Innovator	Typhoid Ps				●		●
		Arenavirus	●					
		Brucellosis					●	
		Cholera (non-oral)	●	●				
		Clostridium difficile				●		
		CMV		●				
		Dengue	●	●		●	●	●
		DTaP-HepB-Hib	●				●	
		DTaP-HepB-Hib-IPV		●			●	●
		DTaP-HepB-IPV					●	
		DTaP-Hib-IPV	●			●	●	
		EV71	●	●	●	●	●	
		ExPEC	●	●	●	●		
		GAS	●	●				
		GBS	●		●			
		HepC	●	●				
		HepD	●					
		HepE		●			●	
		Hia	●					
		HIV	●	●	●	●		
		HMPV	●					
		iNTS	●	●				
		JE (other)	●					
		Leptospirosis	●				●	
		Lyme				●		
		MenABCWY	●			●	●	
		MenAC	●		●	●	●	
		MenAC-Hib				●		
		MenACWY	●	●		●	●	●
		MenACWY-Hib	●					

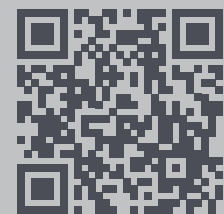


			Preclinical	Phase I	Phase II	Phase III	Approved for use	WHO EUL	PQ'd
Non-Gavi	Other Combination	HIV-Tuberculosis	•						
		HMPV-Parainfluenza		•					
		HMPV-RSV	•	•					
		Leprosy-Tuberculosis	•						
		Parainfluenza-RSV		•					
		Pneumococcal-Typhoid	•						
		Rota-IPV	•						
		Seasonal Influenza-RSV		•					
		Shigella-ETEC	•	•	•				
		Shigella-TCV	•						
		Typhoid-ETEC	•						
		Typhoid-Tetanus					•		

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WHO Prequalified Vaccines

FIGURE 3.2

This exhibit shows the complete list of vaccines prequalified by the World Health Organization.

Source: WHO website, January 2024

Vaccine	Year of PQ	Company	Product Name	Vial Size	Form	RoA
BCG	1987	Japan BCG Laboratory	BCG Freeze Dried Glutamate vaccine	10	Lyophilized	Intradermal
				20	Lyophilized	Intradermal
	1991	BB - NCIPD	BCG Vaccine	10	Lyophilized	Intradermal
				20	Lyophilized	Intradermal
	1994	AJ Vaccines A/S	BCG Vaccine SSI	10	Lyophilized	Intradermal
				20	Lyophilized	Intradermal
2003	Serum Institute of India	BCG Vaccine	20	Lyophilized	Intradermal	
bOPV	2009	GSK	Polio Sabin One and Three	10	Liquid	Oral
				20	Liquid	Oral
	2010	Haffkine Bio Pharmaceutical Corporation	Bivalent type 1&3 Oral Poliomyelitis vaccine, IP (bOPV1&3)	20	Liquid	Oral
				PT Bio Farma (Persero)	Bivalent Oral Poliomyelitis Vaccine Type 1&3 (bOPV 1&3)	20
	2011	Sanofi	none	20	Liquid	Oral
	2013	Serum Institute of India	Poliomyelitis Vaccine (Oral), Bivalent types 1 and 3	20	Liquid	Oral
	2014	Serum Institute of India	Poliomyelitis Vaccine (Oral), Bivalent types 1 and 3	10	Liquid	Oral
	2015	Bharat Biotech International Limited	BIOPOLIO B1/3	20	Liquid	Oral
				PT Bio Farma (Persero)	Bivalent Oral Poliomyelitis Vaccine Type 1&3 (bOPV 1&3)	10
	2017	Beijing Institute of Biological Products	Poliomyelitis Vaccine (live, oral attenuated, human Diploid Cell), type 1 & 3	20	Liquid	Oral
				Bharat Biotech International Limited	BIOPOLIO B1/3	10
	2018	Panacea Biotec Ltd.	Bivalent OPV Type 1 and 3 Poliomyelitis Vaccine, Live (Oral)	20	Liquid	Oral
	2021	Panacea Biotec Ltd.	Bivalent OPV Type 1 and 3 Poliomyelitis Vaccine, Live (Oral)	10	Liquid	Oral
Covid-19	2023	HIPRA	BIMERVAX	1	Liquid	IM
Dengue	2020	Sanofi	Dengvaxia	5	Lyophilized	SC
DT	1995	Serum Institute of India	Diphtheria and Tetanus Vaccine Adsorbed (Pediatric)	1	Liquid	IM
				10	Liquid	IM
				20	Liquid	IM
	1999	PT Bio Farma (Persero)	Adsorbed DT Vaccine	10	Liquid	IM
	2006	BB - NCIPD	Diftet	10	Liquid	IM
20				Liquid	IM	
DTaP-HepB-Hib-IPV	2014	Sanofi	Hexaxim	1	Liquid	IM
DTwP	1995	Serum Institute of India	Diphtheria-Tetanus-Pertussis Vaccine Adsorbed	1	Liquid	IM
				10	Liquid	IM
				20	Liquid	IM
	2001	PT Bio Farma (Persero)	DTP Vaccine	10	Liquid	IM
	2014	Biological E. Limited	TRIPVAC	1	Liquid	IM
10				Liquid	IM	
DTwP-HepB	2006	Serum Institute of India	Diphtheria, Tetanus, Pertussis and Hepatitis B Vaccine Adsorbed	1	Liquid	IM
				10	Liquid	IM

Vaccine	Year of PQ	Company	Product Name	Vial Size	Form	RoA
DTwP-HepB	2006	Serum Institute of India	Diphtheria, Tetanus, Pertussis and Hepatitis B Vaccine Adsorbed	20	Liquid	IM
DTwP-HepB-Hib	2010	Serum Institute of India	Diphtheria, Tetanus, Pertussis, Hepatitis B and Haemophilus influenzae type b Conjugate Vaccine	1	Lyophilized	IM
				2	Lyophilized	IM
				10	Lyophilized	IM
				1	Liquid	IM
				2	Liquid	IM
				10	Liquid	IM
	2011	Biological E. Limited	ComBE Five	1	Lyophilized	IM
				10	Lyophilized	IM
	2012	Biological E. Limited	ComBE Five (Liquid)	1	Liquid	IM
				10	Liquid	IM
	2013	Panacea Biotec Ltd.	Easyfive-TT	1	Liquid	IM
				10	Liquid	IM
	2014	Biological E. Limited	ComBE Five	2	Lyophilized	IM
				5	Lyophilized	IM
				5	Liquid	IM
				5	Liquid	IM
		PT Bio Farma (Persero)	Pentabio	5	Liquid	IM
				10	Liquid	IM
		Sanofi (India)	Shan-5	1	Liquid	IM
				10	Liquid	IM
2016	LG Life Sciences	Eupenta	1	Liquid	IM	
			10	Liquid	IM	
DTwP-HepB-Hib-sIPV	2022	Sanofi (India)	Shan6	1	Liquid	IM
				10	Liquid	IM
DTwP-Hib	2010	Serum Institute of India	Diphtheria, Tetanus, Pertussis and Haemophilus influenzae type b Conjugate	1	Lyophilized	IM
Ebola	2021	Janssen Vaccines Corp.	Mvabea	1	Liquid	IM
				1	Liquid	IM
HepA	2013	GSK	Havrix 720 Junior	1	Liquid	IM
	2017	Sinovac Biotech	HEALIVE (Pediatric)	1	Liquid	IM
HepA (adult)	2013	GSK	Havrix	1	Liquid	IM
	2017	Sinovac Biotech	HEALIVE (Adult)	1	Liquid	IM
HepB	1987	GSK	Engerix-B	1	Liquid	IM
				10	Liquid	IM
				20	Liquid	IM
	1996	LG Life Sciences	Euvax B	10	Liquid	IM
	2001	CIGB	Heberbiovac HB	1	Liquid	IM
				10	Liquid	IM

Vaccine	Year of PQ	Company	Product Name	Vial Size	Form	RoA
HepB	2001	Heber Biotec	Heberbiovac HB	1	Liquid	IM
				10	Liquid	IM
	2004	Serum Institute of India	Hepatitis B Vaccine (rDNA) (Pediatric)	1	Liquid	IM
				10	Liquid	IM
	2020	LG Life Sciences	Euvax B	1	Liquid	IM
	HepB (adult)	1996	LG Life Sciences	Euvax B	1	Liquid
10					Liquid	IM
2004		Serum Institute of India	Hepatitis B Vaccine (rDNA) (Adult)	1	Liquid	IM
				10	Liquid	IM
Hib	1998	Sanofi	Act-HIB	1	Lyophilized	IM/SC
	2008	Serum Institute of India	Hemophilus influenzae type b Conjugated Vaccine	1	Lyophilized	IM
	2010	CIGB	Quimi-Hib	1	Liquid	IM
HPV2	2009	GSK	Cervarix	1	Liquid	IM
				2	Liquid	IM
	2021	Xiamen Innovax	Cecolin	1	Liquid	IM
IPV	2005	Sanofi	IMOVAX POLIO	10	Liquid	IM/SC
	2010	AJ Vaccines A/S	IPV Vaccine AJV	1	Liquid	IM/SC
		Bilthoven Biologicals	Poliomyelitis vaccine	1	Liquid	IM/SC
		GSK	Poliorix	1	Liquid	IM
				2	Liquid	IM
	2014	Bilthoven Biologicals	Poliomyelitis vaccine	5	Liquid	IM/SC
	2016	Serum Institute of India	Poliomyelitis Vaccine (Inactivated)	1	Liquid	IM/SC
				2	Liquid	IM/SC
				5	Liquid	IM/SC
	2018	Sanofi (India)	ShanIPV	5	Liquid	IM
	2019	Serum Institute of India	Poliomyelitis Vaccine (Inactivated)	10	Liquid	IM/SC
	2020	AJ Vaccines A/S	Picovax	5	Liquid	IM
2022	Sanofi (India)	ShanIPV	10	Liquid	IM	
JE inactivated	2013	Biological E. Limited	JEEV® (6µg)	1	Liquid	IM
	2016	Biological E. Limited	JEEV® (3µg)	1	Liquid	IM
	2018	Biological E. Limited	JEEV® (3µg)	5	Liquid	IM
			JEEV® (6µg)	5	Liquid	IM
JE live attenuated	2013	Chengdu Institute of Biological Products	Japanese Encephalitis Vaccine Live (SA14-14-2)	1	Lyophilized	SC
				5	Lyophilized	SC
	2014	GPO-MBP Co., Ltd.	IMOJEV MD	4	Lyophilized	SC
Malaria	2023	Serum Institute of India	R21 Malaria	1	Liquid	IM
				2	Liquid	IM

Vaccine	Year of PQ	Company	Product Name	Vial Size	Form	RoA
Measles	1993	Serum Institute of India	Measles Vaccine, Live, Attenuated	1	Lyophilized	SC
				2	Lyophilized	SC
				5	Lyophilized	SC
				10	Lyophilized	SC
	1997	PT Bio Farma (Persero)	Measles vaccine	10	Lyophilized	SC
2006	PT Bio Farma (Persero)	Measles vaccine	20	Lyophilized	SC	
MenA	2010	Serum Institute of India	Meningococcal A Conjugate MenAfriVac	10	Lyophilized	IM
	2014	Serum Institute of India	Meningococcal A Conjugate 5 micrograms MenAfriVac 5µg	10	Lyophilized	IM
MenACWXY	2023	PATH	MenFive	1	Lyophilized	IM
				5	Lyophilized	IM
		Serum Institute of India	MenFive	1	Lyophilized	IM
				5	Lyophilized	IM
MenACWY	2013	GSK	Menveo	1	Lyophilized	IM
	2014	Sanofi	Menactra	1	Liquid	IM
	2016	Pfizer	Nimenrix	1	Lyophilized	IM
	2022	Sanofi	MenQuadfi	1	Liquid	IM
MMR	2001	GSK	Priorix	1	Lyophilized	IM/SC
	2003	Serum Institute of India	Measles, Mumps and Rubella Vaccine, Live, Attenuated	1	Lyophilized	SC
				2	Lyophilized	SC
				5	Lyophilized	SC
				10	Lyophilized	SC
	2011	GSK	Priorix	2	Lyophilized	IM/SC
mOPV1	2008	Sanofi	ORAL MONOVALENT TYPE 1 POLIOMYELITIS VACCINE	20	Liquid	Oral
				20	Liquid	Oral
	2009	GSK	Polio Sabin Mono T1	10	Liquid	Oral
				20	Liquid	Oral
				20	Liquid	Oral
	Haffkine Bio Pharmaceutical Corporation	Monovalent Type 1 Poliomyelitis Vaccine	20	Liquid	Oral	
	PT Bio Farma (Persero)	Monovalent Oral Poliomyelitis Vaccine Type 1 (mOPV1)	20	Liquid	Oral	
mOPV2	2011	GSK	Polio Sabin Mono Two (oral)	10	Liquid	Oral
				20	Liquid	Oral
	2016	Sanofi	ORAL MONOVALENT TYPE 2 POLIOMYELITIS VACCINE (mOPV2)	20	Liquid	Oral
	2019	PT Bio Farma (Persero)	Monovalent Oral Poliomyelitis Vaccine Type 2	20	Liquid	Oral
mOPV3	2010	GSK	Polio Sabin Mono Three (oral)	10	Liquid	Oral
				20	Liquid	Oral
MR	2000	Serum Institute of India	Measles and Rubella Vaccine, Live, Attenuated	1	Lyophilized	SC
				2	Lyophilized	SC
				5	Lyophilized	SC
				10	Lyophilized	SC

Vaccine	Year of PQ	Company	Product Name	Vial Size	Form	RoA
MR	2019	Biological E. Limited	MRBEV	1	Lyophilized	SC
				5	Lyophilized	SC
				10	Lyophilized	SC
nOPV2	2023	PT Bio Farma (Persero)	Polio Vaccine - Novel Oral (nOPV) Type 2	50	Liquid	Oral
OCV	2001	Valneva	Dukoral	1	Liquid	Oral
	2011	Sanofi (India)	Shanchol	1	Liquid	Oral
	2015	EuBiologics Co., Ltd.	Euvichol	1	Liquid	Oral
	2017	EuBiologics Co., Ltd.	Euvichol-Plus	1	Liquid	Oral
Pandemic Flu H1N1	2009	Seqirus	Celtura	17	Liquid	IM
			Focetria	10	Liquid	IM
			Panvax	10	Liquid	IM/Deep SC
	2010	AstraZeneca	Influenza A (H1N1) 2009 monovalent vaccine	1	Liquid	Intranasal
			GC Biopharma Corp.	Green Flu-S	1	Liquid
		Sanofi	Influenza A (H1N1) 2009 monovalent vaccine	1	Liquid	IM
				10	Liquid	IM
	2012	Serum Institute of India	NASOVAC Influenza Vaccine, Live Attenuated (Human) Freeze-Dried	1	Lyophilized	Intranasal
				5	Lyophilized	Intranasal
				10	Liquid	IM
Pandemic Flu H5N1	2020	AstraZeneca	Pandemic Live Attenuated Vaccine	1	Liquid	Intranasal
PCV10	2009	GSK	Synflorix	1	Liquid	IM
	2010	GSK	Synflorix	2	Liquid	IM
	2017	GSK	Synflorix	4	Liquid	IM
	2019	Serum Institute of India	PNEUMOSIL®	1	Liquid	IM
				5	Liquid	IM
PCV13	2010	Pfizer	Prevnar 13	1	Liquid	IM
	2016	Pfizer	Prevnar 13	4	Liquid	IM
Rabies	2005	Sanofi	VERORAB	1	Lyophilized	IM
	2018	Chiron Behring Vaccines Private Ltd.	Rabipur	1	Lyophilized	IM
		Serum Institute of India	Rabies Vaccine Inactivated (Freeze Dried)	1	Lyophilized	IM
	2019	Zydus Lifesciences	VaxiRab N	1	Lyophilized	IM
Rota	2009	GSK	Rotarix	1	Liquid	Oral
	2018	Bharat Biotech International Limited	Rotavac	5	Liquid	Oral
				10	Liquid	Oral
				Serum Institute of India	Rotasiil-Lyophilized	1
	2019	GSK	Rotarix	2	Lyophilized	Oral
				5	Liquid	Oral
	2020	Serum Institute of India	Rotasiil Thermo	1	Lyophilized	Oral

Vaccine	Year of PQ	Company	Product Name	Vial Size	Form	RoA	
Rota	2020	Serum Institute of India	Rotasiil Thermo	2	Lyophilized	Oral	
		Bharat Biotech International Limited	Rotavac 5D	1	Liquid	Oral	
	2021			5	Liquid	Oral	
		Serum Institute of India	Rotasiil-Liquid	1	Liquid	Oral	
Rubella	2006	Serum Institute of India	Rubella Vaccine, Live, Attenuated	1	Lyophilized	SC	
				2	Lyophilized	SC	
				5	Lyophilized	SC	
				10	Lyophilized	SC	
Seasonal Influenza - QIV	2015	Sanofi	Fluzone Quadrivalent	1	Liquid	IM	
				10	Liquid	IM	
	2016	GC Biopharma Corp.	GC FLU Quadrivalent inj.	1	Liquid	IM	
	2017	GC Biopharma Corp.	GC FLU Quadrivalent inj.	10	Liquid	IM	
	2019	Seqirus	Afluria Quadrivalent (split virion)	10	Liquid	IM	
		SK Bioscience Co., Ltd.	SKYCellflu Quadrivalent inj.	1	Liquid	IM	
			SKYCellflu Quadrivalent Multi inj.	10	Liquid	IM	
	2020	Sanofi	VaxigripTetra	10	Liquid	IM	
	Seasonal Influenza - TIV	2011	GC Biopharma Corp.	GC FLU inj	1	Liquid	IM
			Sanofi	Vaxigrip (split virion)	10	Liquid	IM/SC
2012		GC Biopharma Corp.	GC FLU inj	10	Liquid	IM	
2015		Hualan Biological Bacterin Co., Ltd	Influenza Vaccine (Split virion, inactivated)	1	Liquid	IM	
		Serum Institute of India	Nasovac-S Influenza Vaccine, Live, Attenuated (Human)	1	Lyophilized	Intranasal	
2018		Abbott Biologicals BV	Serinflu	1	Liquid	IM/Deep SC	
		IL-YANG PHARMACEUTICAL CO., LTD.	IL-YANG FLU Vaccine INJ.	1	Liquid	IM	
2019		SK Bioscience Co., Ltd.	SKYCellflu inj.	1	Liquid	IM	
			SKYCellflu Multi inj.	10	Liquid	IM	
2020		Seqirus	Afluria (split virion)	10	Liquid	IM	
2021		Instituto Butantan	influenza trivalent vaccine (split virion, inactivated)	10	Liquid	IM/Deep SC	
2023		Changchun Institute of Biological Products	Influenza Vaccine (Split Virion), Inactivated	1	Liquid	IM	
sIPV		2020	LG Life Sciences	Eupolio Inj.	5	Liquid	IM
	1				Liquid	IM	
	2022	Beijing Institute of Biological Products	Poliomyelitis Vaccine (Vero Cell), Inactivated, Sabin Strains	1	Liquid	IM	
		Sinovac Biotech	sIPV	1	Liquid	IM	
TCV	2017	Bharat Biotech International Limited	Typbar-TCV	1	Liquid	IM	
				5	Liquid	IM	
	2020	Biological E. Limited	TYPHIBEV	1	Liquid	IM	
				5	Liquid	IM	
Td	1995	Serum Institute of India	Diphtheria and Tetanus Vaccine Adsorbed for Adults and Adolescents	1	Liquid	IM	

Vaccine	Year of PQ	Company	Product Name	Vial Size	Form	RoA
Td	1995	Serum Institute of India	Diphtheria and Tetanus Vaccine Adsorbed for Adults and Adolescents	10	Liquid	IM
				20	Liquid	IM
	1997	Sanofi	IMOVAX dT adult	10	Liquid	IM
	2006	BB - NCIPD	Tetadif	10	Liquid	IM
				20	Liquid	IM
	2014	Biological E. Limited	BE Td	1	Liquid	IM
10				Liquid	IM	
2020	Biological E. Limited	BE Td	20	Liquid	IM	
Tdap	2013	GSK	Boostrix	1	Liquid	IM
	2017	Sanofi	Adacel	1	Liquid	IM
tOPV	2002	Sanofi	OPVERO	10	Liquid	Oral
				20	Liquid	Oral
	2006	Haffkine Bio Pharmaceutical Corporation	Polioviral vaccine	20	Liquid	Oral
	2015	Bharat Biotech International Limited	BIOPOLIO	10	Liquid	Oral
				20	Liquid	Oral
	2020	PT Bio Farma (Persero)	Oral Poliomyelitis Vaccines (Oral Drops)	20	Liquid	Oral
TT	1995	Serum Institute of India	Tetanus Toxoid Vaccine Adsorbed	1	Liquid	IM
				10	Liquid	IM
				20	Liquid	IM
	1997	Sanofi	TETAVAX	10	Liquid	IM
				20	Liquid	IM
	1999	PT Bio Farma (Persero)	TT vaccine	10	Liquid	IM
				20	Liquid	IM
	2003	PT Bio Farma (Persero)	TT vaccine	1	Liquid	IM
	2006	BB - NCIPD	Tetatox	10	Liquid	IM
				20	Liquid	IM
	2007	Sanofi (India)	ShanTT	10	Liquid	IM
				20	Liquid	IM
	2009	Biological E. Limited	BEtt	20	Liquid	IM
2012	Biological E. Limited	BEtt	1	Liquid	IM	
			10	Liquid	IM	
Typhoid Ps	2011	Sanofi	Typhym-Vi	20	Liquid	IM
Varicella	2019	SK Bioscience Co., Ltd.	SKYVaricella Inj.	1	Lyophilized	SC
	2022	Sinovac Biotech	Varicella Vaccine	1	Lyophilized	SC
	2023	GC Biopharma Corp.	BARYCELA inj.	1	Lyophilized	Null
YF	1987	Sanofi	STAMARIL	10	Lyophilized	IM/SC
	2001	Bio-Manguinhos/Fiocruz	Yellow Fever Vaccine	5	Lyophilized	IM/SC

Vaccine	Year of PQ	Company	Product Name	Vial Size	Form	RoA		
YF	2001	Bio-Manguinhos/Fiocruz	Yellow Fever Vaccine	50	Lyophilized	IM/SC		
				Institut Pasteur de Dakar	Stabilized Yellow Fever Vaccine	5	Lyophilized	IM/SC
						10	Lyophilized	IM/SC
						20	Lyophilized	IM/SC
	2007	Bio-Manguinhos/Fiocruz	Yellow Fever Vaccine	10	Lyophilized	IM/SC		
	2009	Chumakov	SinSaVac	2	Lyophilized	IM/SC		
				5	Lyophilized	IM/SC		
				10	Lyophilized	IM/SC		
	2022	Chumakov	SinSaVac	10	Lyophilized	IM/SC		

Gavi Vaccine Pipeline

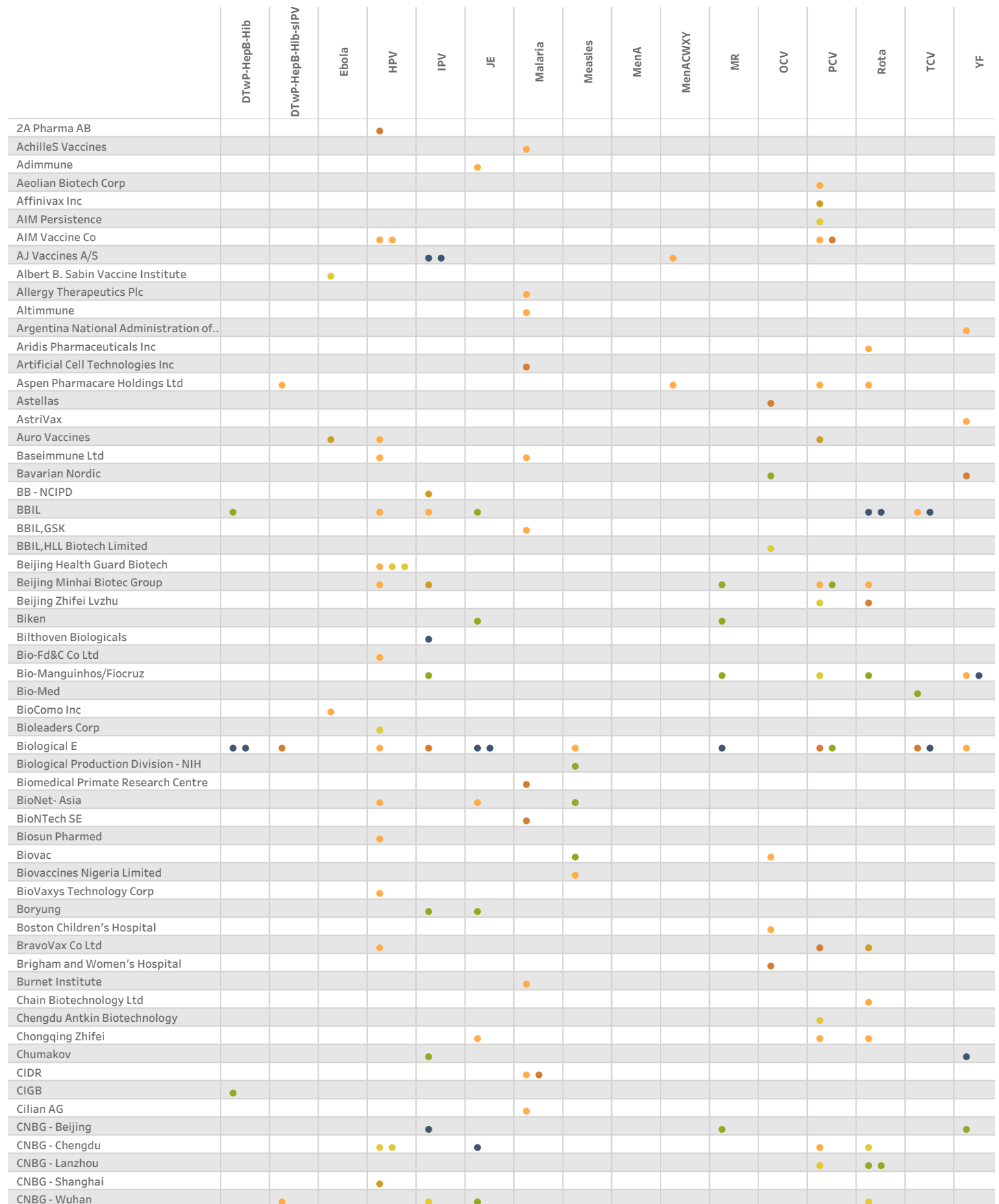
FIGURE 3.3

This exhibit details the current pipeline (as of January 2024) for Gavi-supported vaccines, i.e. manufacturers with prequalified or licensed vaccines in Gavi's portfolio and known relevant candidate products in development.

Source: GVMM, January 2024

Pipeline Status

- Preclinical
- Phase I
- Phase II
- Phase III
- Approved for use
- PQ'd



	DTwP-HepB-Hib	DTwP-HepB-Hib-sIPV	Ebola	HPV	IPV	JE	Malaria	Measles	MenA	MenACWXY	MR	OCV	PCV	Rota	TCV	YF
Codagenix Inc																●
CureVac							●							●		●
Daiichi Sankyo											●					
Defence Therapeutics Inc				●												
Drexel University							●									
Eisai							●	●								
Emergent BioSolutions			●													
Emergex Vaccines Ltd																●
Emervax Inc																●
Enesi Pharma Ltd											●				●	
EpiVax							●									
Etubics Corp			●													
EuBiologics Co., Ltd.				●					●			●	●	●		●
Expres2ion Biotechnologies							●	●				●	●			
EyeGene Inc				●												
Finlay Institute												●	●		●	
Flow Pharma Inc			●													
Gamaleya			●													
GC Biopharma Corp.						●										
GeoVax			●				●									
German Cancer Research Center				●	●											
GPO-MBP Co., Ltd.						●										
Greffex Inc			●													
Griffith University							●									
GSK				●	●		●	●		●			●	●	●	
HanaVax				●												
Hawaii Biotech Inc							●									
Hilleman Labs												●		●		
HLL Biotech Limited	●					●										
IAVI			●													
iBio Inc				●												
ICGEB							●									
Ichor Medical Systems Inc							●									
IMBCAMS					●	●								●		
ImmunityBio Inc			●													
Imperial College London			●													
Imunoloski zavod Zagreb								●			●					
Incepta Vaccine											●					
Indian Immunologicals Ltd	●	●			●						●					●
Inovio Pharmaceuticals Inc			●	●							●					
Inserm							●									
Instituto Butantan				●												
Integrated BioTherapeutics Inc			●													
Inventprise				●								●		●		●
IPD																●
IPD,Univercells											●					
Iran Univ. of Medical Sciences				●												
IVI												●	●		●	
IVI,PT Bio Farma (Persero)															●	
Janssen Vaccines Corp.			●	●												
Jiangsu Kunli Biopharmaceutical												●	●	●		
Jiangsu Recbio Technology				●	●											
Jilin University				●												
Kaketsuken						●										
KM Biologics Co Ltd						●										
Kymab Ltd							●									
LG Life Sciences	●				●											
Liaoning Chengda Biotechnology						●										
Longuide Limited Lab				●												
Lumen Bioscience Inc							●									

Pipeline Status

- Preclinical
- Phase I
- Phase II
- Phase III
- Approved for use
- PQ'd

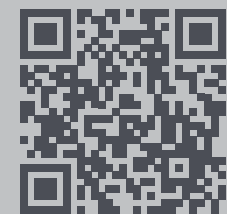
	DTwP-HepB-Hib	DTwP-HepB-Hib-sIPV	Ebola	HPV	IPV	JE	Malaria	Measles	MenA	MenACWXY	MR	OCV	PCV	Rota	TCV	YF
Matrivax													●			
Max Planck Institute													●			
MaxVax														●		
Medigen						●										●
Merck			●	●●									●●	●		
Microgen								●			●			●		●
Micron Biomedical Inc					●						●					
Murdoch Childrens														●		
Mymetics Corp							●									
Najit Technologies Inc																●
Nanolek				●	●								●			
NHRI						●										
NIH			●			●	●								●	
NIH,Sanaria							●									
NIHE					●											
NMRC							●									
Nobelpharma Co Ltd							●									
Novavax			●				●									
Nykode Therapeutics AS			●													
Ocean Biomedical Inc.							●									
Olymvax Biopharmaceuticals													●			
Omniose													●			
Osivax SAS							●									
Otsuka Holdings Co Ltd							●									
Panacea Biotec Ltd.	●	●											●			
PanThera Biopharma LLC			●													
PATH					●		●							●		
Pathovax LLC				●												
Pfizer													●●			
Philipps University of Marburg			●													
PnuVax													●			
POLYVAC					●			●			●			●		
Posvax Co Ltd				●												
Protein Potential LLC							●									
PT Bio Farma (Persero)	●	●		●				●			●			●●		
QIMR Berghofer							●									
Radboud University							●									
Razi Vaccine & Serum								●			●					
Replicate Bioscience				●												
ReVacc Biotech			●													
Rhode Island Hospital							●									
Rodos BioTarget GmbH							●									
RosNIPChI												●				
Saint Louis University																●
Sanaria							●●									
Sanofi					●											●
Sanofi (India)	●	●			●							●			●	
Sanofi,SK Bioscience Co., Ltd.													●			
Seagull BioSolutions								●								
Shanghai Bovax				●●												
Shanghai United Cell Biotech												●				
SII	●●	●		●●	●			●	●●	●	●		●	●●●	●	●
SII, University of Oxford							●									
Sinovac Biotech					●									●		
SK Bioscience Co., Ltd.			●	●									●	●	●	
SK Bioscience Co., Ltd.,Vaxxas															●	
SmartBioTech																●
Soligenix Inc			●													
SPbNIIVS				●									●			
Statens Serum Institute							●	●								

	DTwP-HepB-Hib	DTwP-HepB-Hib-sIPV	Ebola	HPV	IPV	JE	Malaria	Measles	MenA	MenACWXY	MR	OCV	PCV	Rota	TCV	YF
Stemirna Therapeutics Ltd							●									
Sumaya Biotech							● ●									
Sumitomo Dainippon Pharma							●									
Suzhou VAC													● ●			
Symvivo Inc														●		
Takeda					● ●			●			●					
Tergene Biotech Pvt Ltd													●			
TFF Pharmaceuticals Inc			●													
Theravectys SA							●									
Tianjin CanSino			●										●			
Tiba Biotech LLC			●													
Univercells					●						●					
University of Bamako							●									
University of California San Diego							●									
University of Florida							●									
University of Gothenburg												●				
University of Lausanne							●									
University of Oxford			● ●				● ● ●									
University of Queensland			●													●
University of Strathclyde				●												
University of Tokyo			●									●				
University of Washington							●									
University of Wisconsin Madison			●													
USAMRMC							●									
Uvax Bio LLC			●				●									
VABIOTECH						● ●	●					●				
Vac4ALL SAS							●									
Vaccine Technologies, Inc												●				
Valneva						●						●				
Vault Pharma Inc				●												
Vaxart Inc			●													
Vaxcyte													● ●			
VaxSyna Inc				●	●						●					
Vaxxas											●					
VBI Vaccines Inc								●								
Vernagen Inc																●
Virion Therapeutics LLC				●												
VLP Biotech							● ●									
Voltron Therapeutics				●												
Walter Reed Army Institute							●							●		
Walvax				●								●			●	
Wantai BioPharm												●				
Xcellerex																●
Xiamen Innovax				● ● ●												
Yisheng Biopharma			●											●		
Zuventus Healthcare Ltd															●	
Zydus Lifesciences	●			●				●			●				●	

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4.0 PRICING

This section shows known prices of vaccines bought by major procurers and countries between 2016 and 2024.

GVM aggregates public information available from CDC, PAHO, UNICEF and WHO MI4A Public Database Purchase Data (formerly V3P) as well as company press releases, other media sources and country research for Brazil, Russia, India, China and South Africa.

Additional data on vaccine prices is available in the Ready Reference (Section 8).

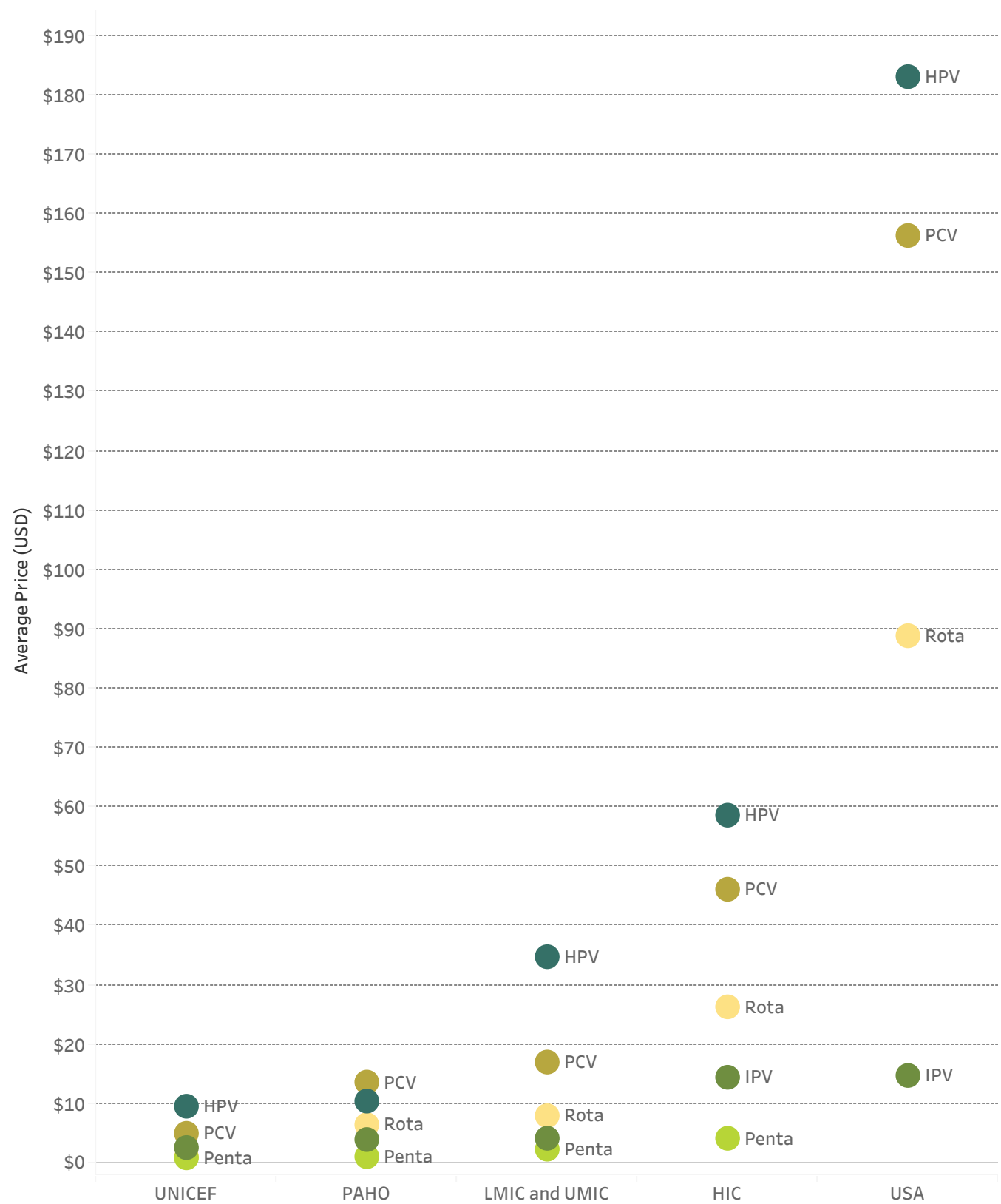
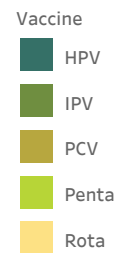
Average Vaccine Pricing per Price Tier (2022)

FIGURE 4.1

This exhibit shows average pricing for selected vaccines in 2022 across different price tiers, i.e.:

- UNICEF as price paid for purchases made for Gavi-supported countries and vaccines
- PAHO as purchases made by PAHO Revolving Fund for supported countries and vaccines
- LMIC as all non-PAHO and non-UNICEF lower-middle-income group countries
- UMIC as all non-PAHO and non-UNICEF upper-middle-income group countries
- HIC as WB high-income group countries
- USA as CDC's public price list

Source: GVMM 2022; M4A Public Database 2022



Average Vaccine Pricing Reference Table

FIGURE 4.2

This exhibit shows the average price (in USD) paid by different tiers (described in Figure 4.1) for specific vaccines. HIC, UMIC and LMIC prices are an average of all MI4A Purchase Data country-reported prices for 2016-2022.

UNICEF price is the minimum price recorded for a given year.

CDC (USA) and PAHO prices are an average of all reported prices for a given year.

Source: GVMM, January 2024; MI4A Public Database 2022

Vaccine	Tier	2016	2017	2018	2019	2020	2021	2022	2023	2024
BCG	HIC	\$2.60	\$1.81	\$3.30	\$4.84	\$5.13	\$4.60	\$4.38		
	UMIC	\$0.53	\$0.58	\$0.33	\$0.55	\$1.94	\$0.84	\$0.74		
	LMIC	\$0.27	\$0.13	\$0.18	\$0.16	\$0.36	\$1.01	\$0.97		
	PAHO	\$0.14	\$0.14	\$0.21	\$0.22	\$0.23	\$0.33	\$0.43	\$0.34	
	UNICEF	\$0.07	\$0.07	\$0.09	\$0.09	\$0.09	\$0.10	\$0.10	\$0.10	\$0.14
bOPV	HIC	\$0.55	\$0.38	\$0.25	\$0.50		\$0.60	\$0.29		
	UMIC	\$0.29	\$0.36	\$0.43	\$0.72	\$0.79	\$0.59	\$0.63		
	LMIC	\$0.19	\$0.16	\$0.20	\$0.66	\$0.32	\$0.48	\$0.59		
	PAHO	\$0.13	\$0.15	\$0.15	\$0.15	\$0.15	\$0.14	\$0.15	\$0.16	
	UNICEF	\$0.12	\$0.12	\$0.10	\$0.09	\$0.10	\$0.09	\$0.11	\$0.11	\$0.11
Covid-19	USA								\$77.03	\$76.08
	HIC						\$13.47	\$13.38		
	UMIC						\$5.90	\$7.17		
	LMIC						\$9.91	\$12.65		
	UNICEF						\$3.00	\$3.00	\$7.50	\$6.75
DT	HIC	\$2.29	\$2.75	\$2.75	\$1.69	\$2.46	\$1.72	\$2.54		
	UMIC	\$0.75	\$0.33	\$0.40	\$0.48	\$0.37	\$0.52	\$0.16		
	LMIC	\$0.83	\$0.38	\$0.37	\$0.24	\$0.34	\$0.29	\$0.11		
	PAHO	\$0.16	\$0.17	\$0.17	\$0.16	\$0.16	\$0.17	\$0.17	\$0.17	\$0.17
	UNICEF	\$0.14	\$0.16	\$0.16	\$0.16	\$0.17	\$0.17	\$0.17	\$0.17	\$0.17
DTaP	USA	\$16.69	\$17.22	\$17.87	\$18.35	\$18.69	\$19.22	\$19.94	\$20.74	\$20.93
	HIC	\$15.78	\$11.13	\$12.70	\$14.31		\$14.70			
	UMIC	\$17.60	\$10.09	\$15.43	\$11.80	\$5.97	\$14.17	\$15.28		
	PAHO	\$12.80	\$15.00	\$15.00	\$15.00	\$16.20	\$16.52	\$16.85	\$18.20	
DTaP-HepB-IPV	USA	\$54.73	\$55.75	\$57.55	\$58.78	\$60.16	\$61.70	\$62.49	\$63.85	\$64.25
DTaP-Hib-IPV	USA	\$56.49	\$56.81	\$57.90	\$59.15	\$60.91	\$62.61	\$65.05	\$67.68	\$68.25
	HIC	\$25.13	\$24.44	\$24.84	\$22.37	\$25.69	\$25.05	\$20.53		
	UMIC	\$19.44	\$21.17	\$17.36	\$18.08	\$17.18	\$19.77	\$21.37		
	PAHO	\$13.00	\$13.60	\$14.20	\$14.80	\$15.84	\$16.31	\$16.96	\$18.30	
DTaP-IPV	USA	\$39.39	\$39.57	\$39.92	\$40.87	\$41.86	\$42.81	\$44.38	\$46.02	\$46.44
	HIC	\$15.95	\$19.75	\$20.00	\$18.63	\$22.72	\$21.14	\$17.67		
	UMIC	\$14.25	\$15.86	\$17.02	\$16.64	\$18.97	\$19.12	\$18.30		
	PAHO	\$10.40	\$11.00	\$11.50	\$12.00	\$12.84	\$13.23	\$13.36	\$14.75	
DTwP	HIC	\$1.38	\$2.41	\$2.27	\$2.50	\$1.61	\$1.83	\$1.34		
	UMIC	\$0.53	\$0.42	\$0.37	\$0.37	\$0.81	\$0.67	\$0.50		
	LMIC	\$0.22	\$0.25	\$0.38	\$0.21	\$0.33	\$0.30	\$0.68		
	PAHO	\$0.22	\$0.20	\$0.17	\$0.18	\$0.18	\$0.18	\$0.17	\$0.18	
	UNICEF	\$0.20	\$0.20	\$0.20	\$0.17	\$0.17	\$0.17	\$0.17	\$0.17	\$0.18
DTwP-Hib	UMIC	\$2.73	\$2.84	\$2.85						
	PAHO	\$2.65	\$2.65	\$2.65	\$2.65	\$3.00	\$3.00	\$3.05	\$3.10	
Ebola	UNICEF					\$98.60	\$98.60	\$98.60	\$98.60	\$98.60
HepA	USA	\$22.19	\$23.16	\$24.00	\$25.52	\$27.24	\$28.46	\$29.72	\$30.71	\$31.30
	HIC	\$20.79	\$20.17	\$23.40	\$20.52	\$25.47	\$20.92	\$19.40		
	UMIC	\$14.36	\$17.35	\$19.82	\$16.59	\$21.19	\$17.44	\$20.32		
	PAHO	\$10.20	\$10.63	\$10.66	\$10.71	\$10.90	\$10.69	\$10.17	\$10.84	
	UNICEF				\$6.99	\$6.99	\$7.55			

Vaccine	Tier	2016	2017	2018	2019	2020	2021	2022	2023	2024
HepAB	USA	\$54.56	\$55.66	\$57.23	\$59.61	\$62.11	\$63.60	\$66.23	\$71.29	\$73.14
HepB	USA	\$18.82	\$19.87	\$21.32	\$28.43	\$30.61	\$31.55	\$32.03	\$31.47	\$31.73
	HIC	\$8.61	\$8.81	\$10.81	\$10.44	\$11.79	\$11.33	\$8.73		
	UMIC	\$2.00	\$2.56	\$2.58	\$1.60	\$2.10	\$3.07	\$5.18		
	LMIC	\$0.70	\$0.62	\$0.73	\$0.50	\$0.83	\$0.67	\$0.88		
	PAHO	\$0.27	\$0.24	\$0.24	\$0.26	\$0.51	\$0.52	\$0.56	\$0.55	
	UNICEF	\$0.17	\$0.17	\$0.17	\$0.24	\$0.24	\$0.24	\$0.24	\$0.24	\$0.24
Hexa	USA						\$91.59	\$94.03	\$97.16	\$97.79
	HIC	\$42.05	\$44.47	\$38.87	\$34.80	\$44.84	\$34.66	\$34.98		
	UMIC	\$28.29	\$31.35	\$33.68	\$24.11	\$31.11	\$27.03	\$24.59		
	PAHO	\$19.00	\$19.80	\$20.60	\$21.12	\$21.12	\$21.12	\$21.33	\$20.77	
Hib	USA	\$10.72	\$10.55	\$10.64	\$10.70	\$10.84	\$11.04	\$11.58	\$12.26	\$12.40
	HIC	\$8.85	\$9.57	\$10.57	\$10.98	\$16.69	\$12.82	\$13.92		
	UMIC	\$6.72	\$7.62	\$6.12	\$5.45		\$3.52	\$4.87		
	PAHO	\$2.05	\$2.05	\$2.05	\$2.05	\$2.15	\$2.15	\$2.15	\$2.25	
HPV	USA	\$121.44	\$130.55	\$145.32	\$159.48	\$162.32	\$170.65	\$183.11	\$196.92	\$201.48
	HIC	\$58.30	\$52.42	\$61.89	\$56.68	\$67.12	\$62.13	\$58.66		
	UMIC	\$36.26	\$45.59	\$29.72	\$12.53	\$16.44	\$25.61	\$44.26		
	LMIC						\$12.60	\$18.26		
	PAHO	\$8.50	\$9.15	\$9.04		\$9.98		\$10.48	\$10.48	
	UNICEF	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$2.90	\$2.90	\$2.90
IPV	USA	\$12.70	\$12.90	\$13.23	\$13.49	\$13.75	\$13.97	\$14.80	\$15.78	\$15.98
	HIC	\$10.40	\$10.98	\$12.56	\$12.96	\$14.17	\$14.62	\$14.49		
	UMIC	\$4.98	\$5.08	\$3.81	\$4.18	\$4.62	\$4.02	\$4.00		
	LMIC	\$2.70	\$2.26	\$5.23	\$3.76	\$4.23	\$6.55	\$4.46		
	PAHO	\$2.35	\$3.60	\$3.65	\$4.30	\$3.10	\$3.10	\$4.00	\$2.46	
	UNICEF	\$0.83	\$0.85	\$0.93	\$2.09	\$2.09	\$1.75	\$1.50	\$1.25	\$1.25
JE live attenuated	HIC		\$10.24	\$19.37	\$16.69					
	UNICEF	\$0.41	\$0.41	\$0.41	\$0.45	\$0.45	\$0.45	\$0.45	\$0.45	
Measles	UMIC	\$0.96	\$0.41	\$0.46	\$0.55	\$0.57	\$0.53	\$0.92		
	UNICEF	\$0.23	\$0.24	\$0.24	\$0.24	\$0.24	\$0.25	\$0.26	\$0.27	\$0.31
MenA	UNICEF	\$0.49	\$0.51	\$0.52	\$0.54	\$0.60	\$0.59	\$0.65	\$0.67	
MenACW Ps	UNICEF		\$2.37	\$2.72	\$2.72	\$2.72	\$2.72	\$2.72	\$2.72	
MenACWY	USA	\$78.08	\$76.99	\$78.54	\$79.35	\$82.02	\$86.11	\$89.65	\$94.08	\$95.55
	HIC	\$45.99	\$47.16	\$41.15	\$35.12	\$44.91	\$37.27	\$33.46		
	UMIC	\$32.71		\$28.49	\$32.39	\$39.55	\$37.10			
	PAHO	\$20.30	\$20.30	\$20.30	\$20.30	\$20.30	\$20.30	\$20.30	\$20.30	
MenB	USA	\$105.48	\$99.43	\$99.88	\$102.41	\$105.40	\$111.35	\$117.43	\$124.91	\$126.93
	HIC	\$87.80	\$82.82	\$82.92	\$72.40	\$82.59	\$79.14	\$70.60		
MenC	HIC	\$25.67	\$21.42	\$24.97	\$20.79	\$23.92	\$18.90	\$20.36		
	UNICEF			\$9.12	\$9.12	\$9.12	\$9.12			
MenC-Hib	USA	\$10.45	\$10.53							
	HIC	\$18.24	\$18.28	\$19.34						
MMR	USA	\$30.04	\$30.54	\$32.32	\$34.38	\$35.20	\$36.52	\$39.03	\$41.91	\$43.08
	HIC	\$8.19	\$8.30	\$8.69	\$9.23	\$9.51	\$8.46	\$7.15		
	UMIC	\$3.90	\$6.50	\$4.90	\$4.34	\$5.97	\$6.00	\$5.04		

Vaccine	Tier	2016	2017	2018	2019	2020	2021	2022	2023	2024
MMR	LMIC	\$1.18	\$1.26	\$1.99	\$2.12	\$3.20	\$2.78	\$4.57		
	PAHO	\$3.17	\$3.57	\$3.26	\$3.26	\$3.62	\$3.30	\$2.96	\$3.11	
	UNICEF	\$1.13	\$1.13	\$1.26	\$1.28	\$1.28	\$1.41	\$1.55	\$1.71	\$1.71
MMRV	USA	\$113.38	\$116.73	\$123.37	\$129.83	\$135.48	\$141.47	\$150.84	\$162.42	\$165.09
MR	UMIC	\$1.98	\$2.06	\$2.34	\$1.14	\$4.96	\$4.66	\$1.15		
	LMIC	\$0.72	\$1.09	\$1.03	\$0.97	\$1.48	\$2.79	\$2.67		
	PAHO	\$1.43	\$1.43	\$1.43	\$1.57	\$1.57	\$2.48	\$1.75	\$1.90	
	UNICEF	\$0.61	\$0.63	\$0.64	\$0.66	\$0.58	\$0.72	\$0.72	\$0.79	\$0.84
OCV	PAHO	\$1.85	\$1.85	\$1.85	\$1.70	\$1.70	\$1.70		\$2.01	
	UNICEF	\$1.70	\$1.30	\$1.25	\$1.29	\$1.32	\$1.35	\$1.43	\$1.38	
PCV	USA	\$108.09	\$113.00	\$122.81	\$128.63	\$134.40	\$140.91	\$156.34	\$163.70	\$167.31
	HIC	\$44.00	\$45.47	\$49.89	\$43.41	\$45.11	\$42.44	\$46.17		
	UMIC	\$24.69	\$32.34	\$29.39	\$26.02	\$21.33	\$23.19	\$19.68		
	LMIC	\$15.00	\$16.83	\$17.52	\$14.21	\$16.22	\$11.58	\$10.92		
	PAHO	\$14.50	\$13.68	\$13.68	\$13.68	\$13.68	\$14.50	\$13.68	\$8.62	
	UNICEF	\$3.30	\$3.05	\$2.95	\$2.90	\$2.00	\$2.00	\$2.00	\$1.50	\$1.50
Penta	HIC	\$3.33	\$3.18	\$4.70	\$4.45	\$3.92	\$1.72	\$4.22		
	UMIC	\$1.92	\$1.39	\$1.34	\$1.55	\$1.33	\$1.12	\$2.54		
	LMIC	\$1.51	\$1.70	\$1.83	\$0.97	\$1.30	\$1.18	\$2.13		
	PAHO	\$2.10	\$1.06	\$1.08	\$1.09	\$1.01	\$1.03	\$1.12	\$1.19	
	UNICEF	\$1.15	\$0.68	\$0.65	\$0.69	\$0.68	\$0.75	\$0.75	\$0.78	\$0.78
PPSV	USA	\$32.77	\$38.22	\$51.70	\$57.72	\$60.43	\$64.35	\$69.82	\$72.67	\$73.88
	HIC	\$17.52	\$20.93	\$21.66	\$25.63	\$36.53	\$34.18	\$34.11		
	UMIC						\$15.96	\$14.23		
	PAHO	\$7.54	\$6.81	\$7.98	\$8.30	\$8.63	\$8.63	\$9.49	\$9.44	
Rabies	HIC	\$29.18	\$30.50	\$26.99	\$30.83	\$41.66	\$33.42	\$29.08		
	UMIC	\$7.41	\$13.95	\$11.43	\$10.55	\$17.55	\$8.15	\$7.93		
	PAHO	\$11.65	\$12.20	\$12.80	\$11.00	\$9.93	\$10.44	\$10.20	\$9.39	
	UNICEF	\$8.00			\$7.50	\$8.00	\$9.00	\$9.00		
Rota	USA	\$76.27	\$78.54	\$81.24	\$82.36	\$83.99	\$86.02	\$88.90	\$91.73	\$92.35
	HIC	\$26.33	\$16.14	\$12.16	\$20.76	\$23.27	\$25.03	\$26.37		
	UMIC	\$7.08	\$16.81	\$9.90	\$7.70	\$8.03	\$7.84	\$9.62		
	LMIC	\$5.34	\$6.54	\$8.82	\$3.17			\$4.81		
	PAHO	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50		\$6.50	\$3.73	
	UNICEF	\$2.08	\$2.13	\$2.22	\$0.85	\$0.85	\$0.85	\$0.60	\$0.60	\$0.60
Seasonal Influenza	USA	\$12.63	\$12.98	\$13.34	\$13.73	\$13.96	\$14.47	\$15.36	\$16.18	\$16.32
	HIC	\$5.49	\$6.40	\$5.98	\$9.43	\$7.36	\$8.46	\$8.23		
	UMIC		\$2.67	\$3.20	\$3.77	\$11.09	\$5.02	\$4.86		
	PAHO	\$2.81	\$3.18	\$2.94	\$3.50	\$3.19	\$3.36	\$3.24	\$3.32	
Shingles	USA	\$117.12	\$133.42	\$115.89	\$102.47	\$102.09	\$100.56	\$102.74	\$112.64	\$120.92
TBE	HIC	\$16.15	\$21.57	\$18.47	\$16.94		\$17.16	\$11.23		
	UMIC	\$5.34	\$7.31	\$6.81	\$4.73					
TCV	UNICEF			\$1.50	\$1.50	\$1.50	\$1.50	\$0.95	\$0.95	\$0.95
Td	USA	\$15.81	\$15.70	\$16.54	\$17.77	\$18.58	\$18.96	\$19.97	\$21.24	\$21.58
	HIC	\$7.07	\$5.81	\$5.13	\$7.23	\$8.67	\$6.83	\$4.76		
	UMIC	\$0.73	\$0.53	\$0.47	\$0.36	\$0.70	\$0.50	\$0.98		

Vaccine	Tier	2016	2017	2018	2019	2020	2021	2022	2023	2024
Td	LMIC	\$0.52	\$0.37	\$0.21	\$0.17	\$0.17	\$0.35	\$0.41		
	PAHO	\$0.11	\$0.11	\$0.09	\$0.10	\$0.10	\$0.10	\$0.11	\$0.12	
	UNICEF	\$0.10	\$0.10	\$0.10	\$0.09	\$0.09	\$0.09	\$0.09	\$0.11	\$0.11
Td-IPV	HIC	\$12.49	\$12.64	\$14.84	\$15.98	\$14.13	\$19.72			
Tdap	USA	\$27.42	\$27.87	\$27.96	\$28.28	\$28.78	\$29.55	\$30.63	\$31.91	\$32.19
	HIC	\$15.70	\$17.35	\$17.12	\$17.96	\$19.51	\$17.94	\$13.23		
	UMIC		\$20.13	\$19.77	\$11.64	\$19.51		\$13.34		
	PAHO	\$10.93	\$11.39	\$11.47	\$12.72	\$12.94	\$12.77	\$11.04	\$11.22	
TT	HIC	\$3.67	\$3.28	\$2.00	\$3.76	\$5.35	\$3.69	\$2.81		
	UMIC	\$0.59	\$0.48	\$1.47	\$0.86	\$0.82	\$1.05	\$0.61		
	LMIC	\$0.38	\$0.20	\$0.23						
	UNICEF	\$0.05	\$0.05	\$0.05	\$0.07					
Typhoid Ps	HIC	\$14.95	\$13.70	\$13.44	\$11.97	\$15.69	\$15.20	\$10.82		
	UMIC	\$4.56	\$8.28	\$11.29	\$6.94	\$6.52				
	PAHO	\$8.90	\$9.00	\$9.00	\$10.00	\$10.00	\$10.00	\$5.00		
Varicella	USA	\$76.97	\$79.16	\$85.07	\$91.92	\$94.79	\$100.20	\$107.95	\$116.40	\$119.39
	HIC	\$43.13	\$36.64	\$35.21	\$24.35	\$33.89	\$33.57	\$26.72		
	UMIC	\$20.04	\$27.77	\$22.73	\$29.54		\$35.75			
	PAHO	\$14.85	\$14.85	\$14.46	\$16.59	\$15.85	\$15.37	\$14.96	\$14.96	
YF	HIC	\$25.35	\$38.63	\$30.32	\$25.46	\$36.59	\$39.07	\$28.49		
	UMIC	\$13.29	\$10.71	\$12.56	\$14.22	\$13.41	\$12.44	\$12.52		
	PAHO	\$1.11	\$1.17	\$1.35	\$1.43	\$1.35	\$1.35	\$1.48	\$1.41	
	UNICEF	\$0.77	\$0.85	\$0.97	\$0.89	\$0.89	\$0.97	\$0.97	\$1.15	\$1.15

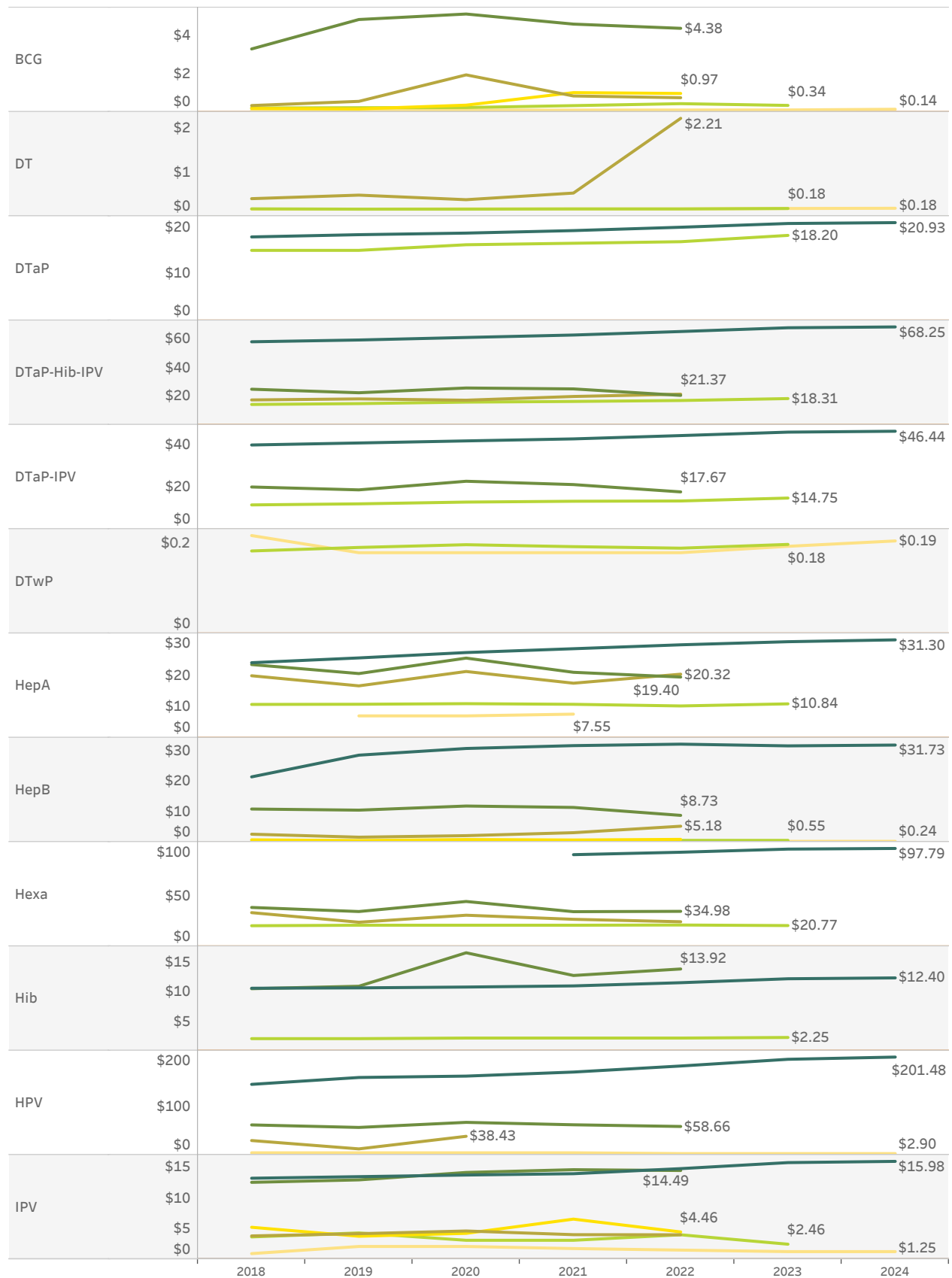
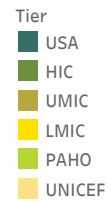
Vaccine Pricing Trends by Price Tier (2018–2024)

FIGURE 4.3

This exhibit shows changes in pricing (in USD) across vaccines of interest from 2018 through 2024 by price tier.

MI4A Purchase Data is only available from 2018 through 2022. Each vaccine row uses an independent y-axis.

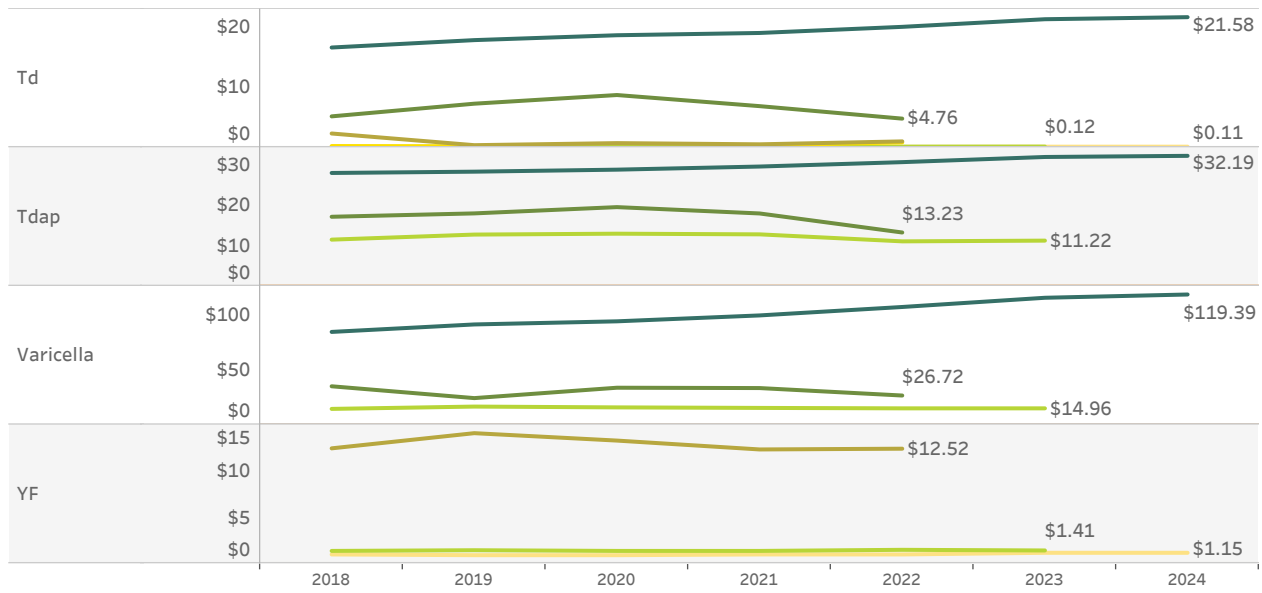
Source: GVM, January 2024; MI4A Public Database 2022







- Tier
- USA
 - HIC
 - UMIC
 - LMIC
 - PAHO
 - UNICEF

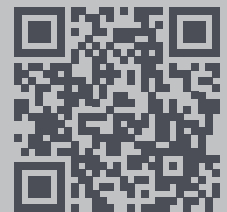


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5.0 SHARE

This section shows the forecasted share of global and Gavi vaccine market volumes and revenues in 2024 based on GVMM analysis.

The data behind the exhibits are aggregated and anonymized; please contact gvmm@linksbridge.com for additional information.

Global Market Share (2024)

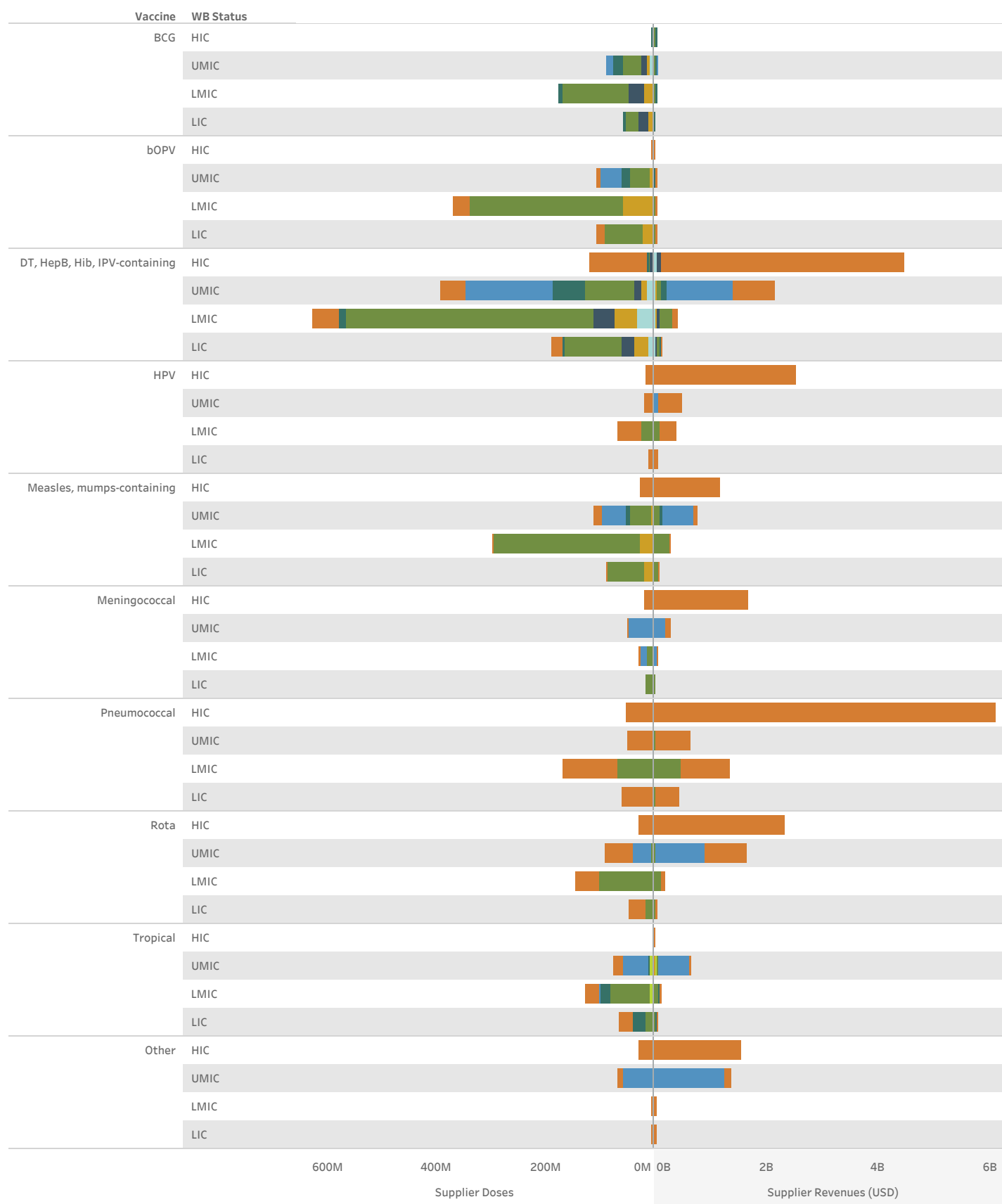
FIGURE 5.1

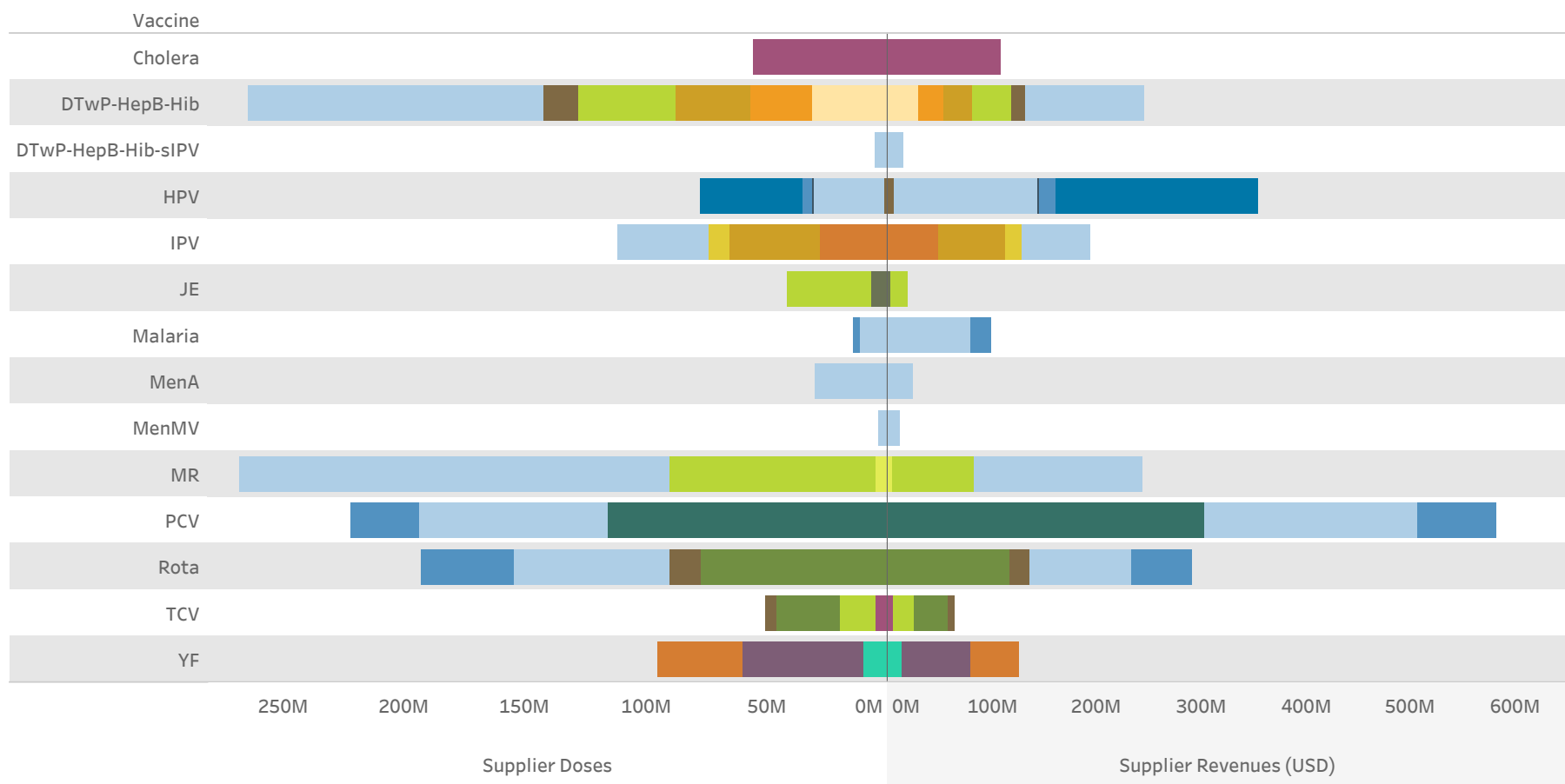
This exhibit shows the estimated share of vaccine volumes supplied and revenues (USD) generated globally in 2024 for selected major vaccines.

Countries are categorized based on World Bank income status and suppliers are grouped by type or geography.

Source: GVMM, January 2024, WHO MI4A database, January 2024

Supplier





Gavi Market Share (2024)

FIGURE 5.2

This exhibit shows the estimated market share of volume doses and revenues (USD) for Gavi vaccines supplied to eligible countries in 2024. The visual is presented at the level of individual supplier and is anonymized for confidentiality.

Source: GVMM, January 2024

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6.0 VALUE

This section shows the value of public vaccine markets to industry from 2004 to 2023. As described in the Scope section, 6.0 Value excludes private, military, traveler, hospital and stockpile markets as well as some adult vaccines.

Exhibits break down how this spending has evolved since 2004 by country income group and by vaccine franchise. This section also includes a detailed analysis of current spending by vaccine, country income group and WHO region.

GMMM also provides a projection of market value from 2024 to 2040 and additional breakdowns of spending by Gavi eligibility, country and detailed price tiers.

Market Value (2004-2023)

FIGURE 6.1

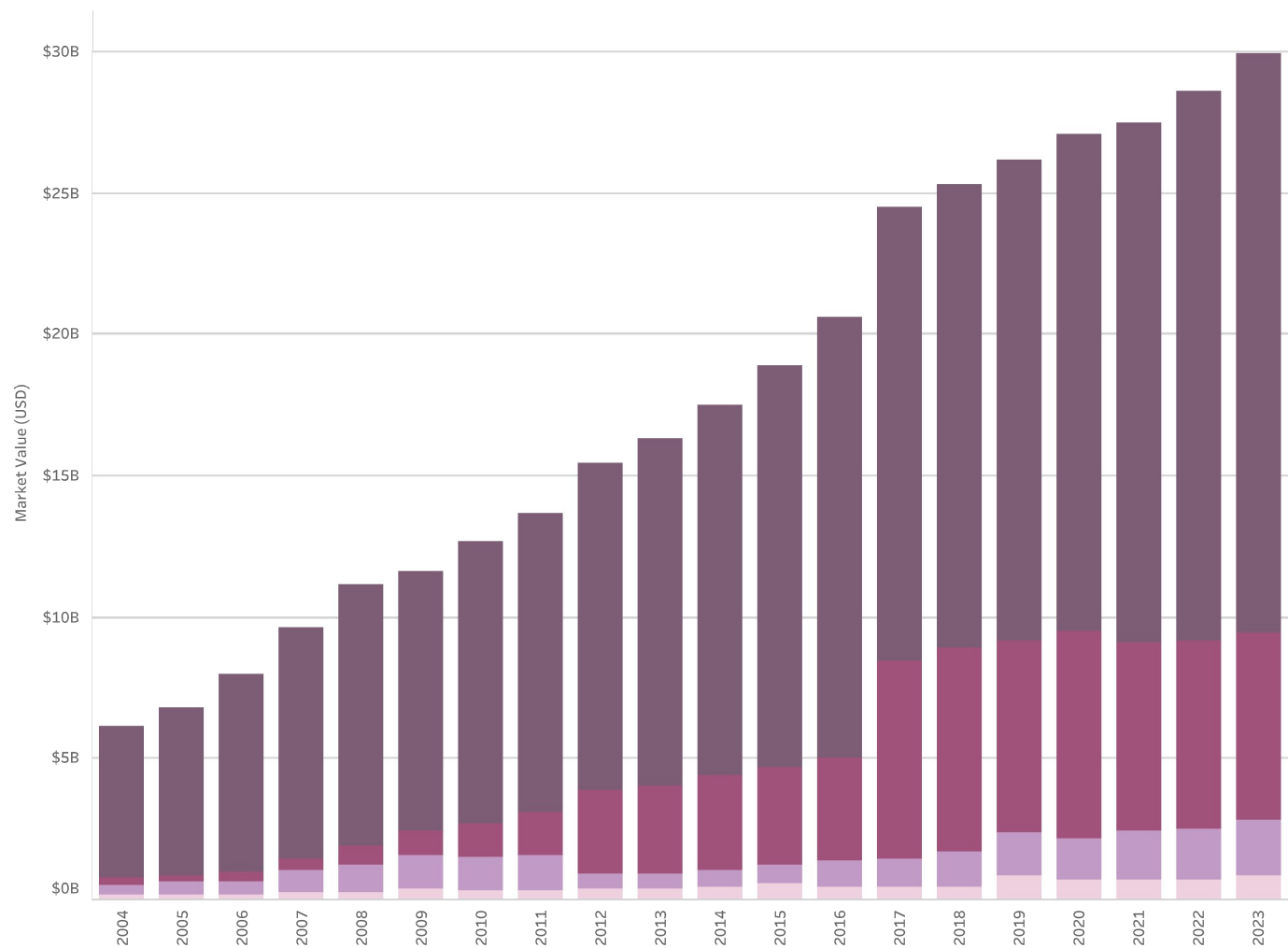
This exhibit shows the growth of public vaccine markets by World Bank country income group from 2004 through 2023.

Countries that changed country income group between 2004 and 2023 are shown in their correct group for any particular year, i.e. the exhibit shows an LMIC in 2004 as an LMIC but as a UMIC in 2017, if it changed income group in 2017.

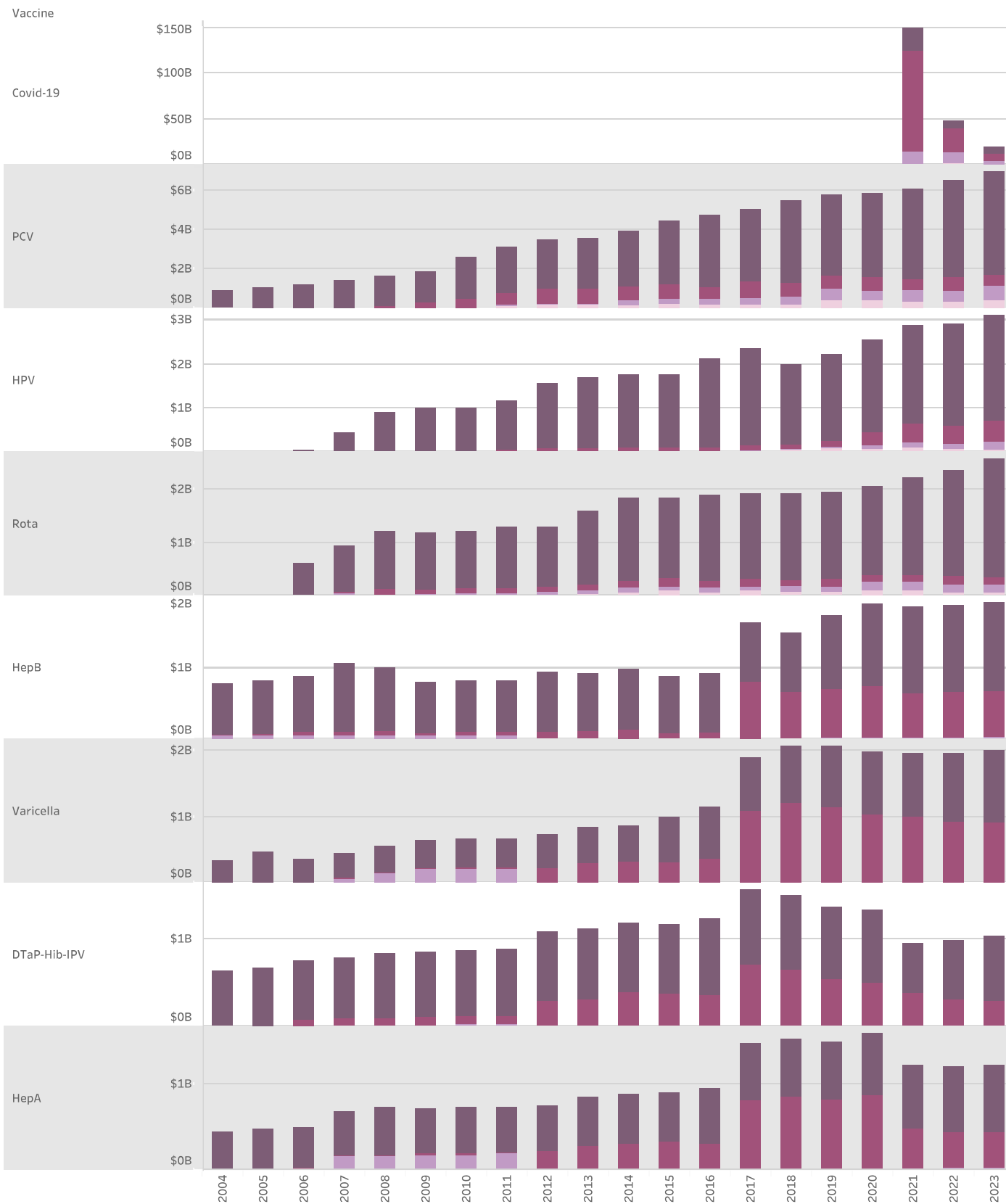
Spending includes routine immunization and estimates for campaigns and other SIAs. Covid-19 vaccine is excluded due to its disproportionate impact on the scale.

Spending excludes private, military, traveler, hospital and stockpile markets as well as some adult vaccines.

Source: GVM, January 2024



WB Status
 ■ HIC
 ■ UMIC
 ■ LMIC
 ■ LIC



Top Vaccine Franchises

FIGURE 6.2

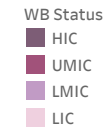
This exhibit shows the growth of the world's top vaccine franchises by market value from 2004 through 2023.

The top 8 vaccine franchises are selected and then ordered according to their total summed value across years. The Y axis is set independently for each vaccine market.

Covid-19 tops the list, followed by PCV—significantly driven by Prevnar sales in the United States. Other innovator vaccines also figure prominently.

Countries are categorized based on World Bank income status.

Source: GVMM, January 2024



Total Market Value (2023)

FIGURE 6.3

This exhibit summarizes the total estimated value of global public vaccine markets in 2023 by product, World Bank country income group and WHO region.

Values are shown in USD. Values shown as blank table cells indicate zero market value. Values shown as \$0.00M indicate value is less than \$5,000, i.e. do not round up to two-decimal million units. Total values are rounded.

We exclude products with negligible current market value, e.g. standalone diphtheria.

Source: GVMM, January 2024

Vaccine	WB Status	AFR	AMR	EMR	EUR	SEAR	WPR	Grand Total
BCG	HIC	\$0.01M	\$0.24M	\$4.18M	\$5.30M		\$8.51M	\$18.25M
	UMIC	\$3.18M	\$10.47M	\$2.15M	\$13.79M	\$5.35M	\$4.19M	\$39.13M
	LMIC	\$9.19M	\$0.30M	\$4.71M	\$0.67M	\$3.54M	\$2.25M	\$20.67M
	LIC	\$6.87M		\$2.79M				\$9.66M
	Total	\$19.25M	\$11.01M	\$13.84M	\$19.77M	\$8.90M	\$14.95M	\$87.71M
bOPV	HIC	\$0.01M	\$0.07M	\$2.44M	\$0.25M		\$0.03M	\$2.79M
	UMIC	\$1.35M	\$2.93M	\$3.47M	\$3.76M	\$4.05M	\$6.99M	\$22.55M
	LMIC	\$12.30M	\$0.37M	\$12.13M	\$1.31M	\$2.64M	\$2.67M	\$31.43M
	LIC	\$11.36M		\$3.35M				\$14.71M
	Total	\$25.02M	\$3.37M	\$21.38M	\$5.32M	\$6.69M	\$9.70M	\$71.48M
Covid-19	HIC	\$0.64M	\$2,913.78M	\$356.14M	\$3,434.70M		\$1,400.60M	\$8,105.87M
	UMIC	\$219.59M	\$1,192.25M	\$153.81M	\$971.11M	\$387.85M	\$5,490.29M	\$8,414.89M
	LMIC	\$174.95M	\$13.91M	\$284.30M	\$53.37M	\$1,782.67M	\$175.01M	\$2,484.22M
	LIC	\$110.52M		\$37.64M				\$148.16M
	Total	\$505.70M	\$4,119.94M	\$831.90M	\$4,459.19M	\$2,170.52M	\$7,065.91M	\$19,153.14M
DT	HIC	\$0.00M	\$0.00M	\$0.22M			\$3.28M	\$3.50M
	UMIC	\$0.16M	\$0.03M		\$1.79M		\$4.03M	\$6.01M
	LMIC	\$0.28M			\$0.17M	\$0.08M	\$0.00M	\$0.52M
	LIC	\$0.73M		\$0.04M				\$0.77M
	Total	\$1.17M	\$0.03M	\$0.26M	\$1.96M	\$0.08M	\$7.31M	\$10.80M
DTaP	HIC		\$140.42M	\$11.38M	\$9.21M		\$9.99M	\$171.01M
	UMIC				\$6.36M		\$20.15M	\$26.51M
	LMIC						\$0.03M	\$0.03M
	Total		\$140.42M	\$11.38M	\$15.58M		\$30.17M	\$197.54M
DTaP-HepB-Hib-IPV	HIC		\$337.35M	\$61.11M	\$535.43M		\$45.49M	\$979.37M
	UMIC	\$103.13M	\$169.90M	\$6.75M	\$27.30M		\$51.67M	\$358.74M
	LMIC			\$13.87M				\$13.87M
	Total	\$103.13M	\$507.25M	\$81.73M	\$562.72M		\$97.16M	\$1,351.98M
DTaP-HepB-IPV	HIC		\$180.70M					\$180.70M
	LMIC						\$0.17M	\$0.17M
	Total		\$180.70M				\$0.17M	\$180.87M
DTaP-Hib	HIC			\$16.90M				\$16.90M
	UMIC						\$223.52M	\$223.52M
	Total			\$16.90M			\$223.52M	\$240.42M
DTaP-Hib-IPV	HIC		\$668.51M	\$1.92M	\$45.42M		\$22.53M	\$738.38M
	UMIC		\$4.28M	\$1.47M	\$101.35M		\$181.69M	\$288.80M
	Total		\$672.79M	\$3.39M	\$146.77M		\$204.22M	\$1,027.17M
DTaP-IPV	HIC		\$138.64M	\$2.22M	\$128.43M		\$181.98M	\$451.26M

Vaccine	WB Status	AFR	AMR	EMR	EUR	SEAR	WPR	Grand Total
DTaP-IPV	UMIC		\$0.78M		\$34.17M			\$34.95M
	Total		\$139.42M	\$2.22M	\$162.59M		\$181.98M	\$486.21M
DTwP	HIC	\$0.00M	\$0.04M	\$0.13M	\$1.22M			\$1.39M
	UMIC		\$3.28M	\$1.74M	\$3.17M	\$0.97M	\$0.00M	\$9.17M
	LMIC	\$0.10M	\$0.17M	\$2.85M	\$0.38M	\$0.08M	\$0.36M	\$3.93M
	LIC	\$0.10M						\$0.10M
	Total	\$0.20M	\$3.49M	\$4.71M	\$4.78M	\$1.05M	\$0.37M	\$14.59M
DTwP-HepB-Hib	HIC	\$0.04M	\$0.31M	\$3.52M				\$3.87M
	UMIC	\$0.82M	\$22.95M	\$5.20M	\$1.29M	\$19.83M	\$0.07M	\$50.17M
	LMIC	\$53.88M	\$2.54M	\$33.98M	\$4.26M	\$15.22M	\$11.91M	\$121.79M
	LIC	\$52.68M		\$13.81M				\$66.49M
	Total	\$107.43M	\$25.80M	\$56.51M	\$5.55M	\$35.05M	\$11.98M	\$242.32M
DTwP-Hib	HIC		\$0.24M					\$0.24M
	LMIC	\$7.66M						\$7.66M
	Total	\$7.66M	\$0.24M					\$7.90M
HepA	HIC		\$715.50M	\$34.55M	\$22.93M		\$15.03M	\$788.01M
	UMIC		\$66.34M		\$54.63M		\$308.48M	\$429.45M
	LMIC		\$1.61M	\$5.99M			\$1.16M	\$8.76M
	Total		\$783.44M	\$40.54M	\$77.57M		\$324.68M	\$1,226.23M
HepB	HIC		\$1,142.09M	\$8.67M	\$32.70M		\$46.91M	\$1,230.38M
	UMIC	\$1.72M	\$6.31M	\$2.34M	\$11.31M	\$2.79M	\$632.88M	\$657.35M
	LMIC	\$6.77M	\$0.07M	\$6.61M	\$0.77M	\$0.32M	\$2.34M	\$16.87M
	LIC	\$2.43M		\$0.79M				\$3.22M
	Total	\$10.91M	\$1,148.48M	\$18.40M	\$44.79M	\$3.11M	\$682.12M	\$1,907.82M
Hib	HIC				\$12.58M		\$84.56M	\$97.14M
	UMIC		\$0.93M		\$34.97M		\$175.97M	\$211.87M
	LMIC				\$0.78M		\$0.01M	\$0.80M
	Total		\$0.93M		\$48.33M		\$260.54M	\$309.80M
HPV	HIC	\$0.09M	\$1,559.34M	\$26.65M	\$659.84M		\$160.79M	\$2,406.71M
	UMIC	\$17.53M	\$102.20M	\$1.64M	\$36.38M	\$31.09M	\$302.38M	\$491.21M
	LMIC	\$103.83M	\$2.49M	\$12.85M	\$6.93M	\$22.09M	\$21.77M	\$169.97M
	LIC	\$49.32M						\$49.32M
	Total	\$170.77M	\$1,664.03M	\$41.14M	\$703.15M	\$53.17M	\$484.94M	\$3,117.21M
IPV	HIC	\$0.03M	\$1.77M	\$3.96M	\$6.14M			\$11.89M
	UMIC	\$1.08M	\$35.37M	\$12.71M	\$27.22M	\$17.61M	\$106.61M	\$200.59M
	LMIC	\$55.97M	\$2.73M	\$61.79M	\$6.51M	\$6.96M	\$17.81M	\$151.76M
	LIC	\$55.05M		\$16.30M				\$71.35M
	Total	\$112.13M	\$39.86M	\$94.75M	\$39.86M	\$24.57M	\$124.42M	\$435.60M

Vaccine	WB Status	AFR	AMR	EMR	EUR	SEAR	WPR	Grand Total
JE	HIC						\$52.67M	\$52.67M
	UMIC					\$10.10M	\$532.67M	\$542.77M
	LMIC					\$0.78M	\$3.34M	\$4.12M
	Total					\$10.88M	\$588.68M	\$599.56M
Measles	HIC			\$3.05M				\$3.05M
	UMIC	\$3.36M	\$0.00M	\$2.00M	\$0.09M			\$5.45M
	LMIC	\$10.76M		\$0.81M			\$0.85M	\$12.42M
	LIC	\$19.79M		\$1.64M				\$21.43M
	Total	\$33.91M	\$0.00M	\$7.50M	\$0.09M		\$0.85M	\$42.35M
MenA	LMIC	\$9.90M						\$9.90M
	LIC	\$6.98M		\$1.61M				\$8.60M
	Total	\$16.89M		\$1.61M				\$18.50M
MenA Ps	UMIC						\$1.57M	\$1.57M
	Total						\$1.57M	\$1.57M
MenAC	HIC			\$0.01M				\$0.01M
	UMIC						\$114.31M	\$114.31M
	Total			\$0.01M			\$114.31M	\$114.32M
MenAC Ps	UMIC						\$92.81M	\$92.81M
	LMIC			\$32.10M				\$32.10M
	Total			\$32.10M			\$92.81M	\$124.91M
MenACYW-135	HIC		\$1,088.30M	\$39.66M	\$71.39M		\$33.60M	\$1,232.94M
	UMIC	\$1.02M	\$63.83M	\$16.03M	\$0.72M	\$0.17M	\$14.09M	\$95.86M
	LMIC			\$36.54M				\$36.54M
	Total	\$1.02M	\$1,152.13M	\$92.22M	\$72.11M	\$0.17M	\$47.69M	\$1,365.34M
MenB	HIC		\$290.48M		\$336.16M		\$13.87M	\$640.52M
	Total		\$290.48M		\$336.16M		\$13.87M	\$640.52M
MenBC	UMIC		\$1.67M					\$1.67M
	Total		\$1.67M					\$1.67M
MenC	HIC		\$9.53M		\$81.32M			\$90.85M
	UMIC		\$200.46M					\$200.46M
	Total		\$210.00M		\$81.32M			\$291.31M
MMR	HIC	\$0.03M	\$311.91M	\$24.42M	\$139.20M		\$15.11M	\$490.68M
	UMIC	\$0.16M	\$60.23M	\$60.59M	\$46.45M	\$7.34M	\$522.68M	\$697.46M
	LMIC	\$5.24M	\$2.75M	\$26.41M	\$12.11M	\$2.94M	\$11.44M	\$60.89M
	LIC			\$1.86M				\$1.86M
	Total	\$5.43M	\$374.90M	\$113.29M	\$197.75M	\$10.28M	\$549.23M	\$1,250.88M
MMRV	HIC		\$707.81M		\$240.82M		\$52.48M	\$1,001.11M
	UMIC		\$24.55M					\$24.55M

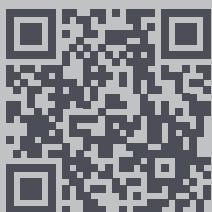
Vaccine	WB Status	AFR	AMR	EMR	EUR	SEAR	WPR	Grand Total
MMRV	Total		\$732.36M		\$240.82M		\$52.48M	\$1,025.66M
MR	HIC		\$0.16M				\$7.94M	\$8.10M
	UMIC	\$2.82M	\$3.60M	\$1.04M	\$0.00M	\$15.22M	\$1.51M	\$24.18M
	LMIC	\$29.58M	\$0.44M	\$24.38M	\$1.69M	\$78.22M	\$25.21M	\$159.51M
	LIC	\$17.77M		\$35.03M				\$52.80M
	Total	\$50.17M	\$4.20M	\$60.45M	\$1.69M	\$93.44M	\$34.65M	\$244.60M
Mumps	HIC						\$0.99M	\$0.99M
	Total						\$0.99M	\$0.99M
OCV	LMIC	\$48.54M				\$9.93M	\$66.04M	\$124.51M
	LIC	\$39.76M		\$20.48M				\$60.24M
	Total	\$88.30M		\$20.48M		\$9.93M	\$66.04M	\$184.75M
PCV	HIC	\$0.24M	\$3,521.79M	\$163.99M	\$1,156.34M		\$439.09M	\$5,281.44M
	UMIC	\$68.54M	\$226.84M	\$5.17M	\$194.71M	\$38.94M	\$29.26M	\$563.45M
	LMIC	\$347.40M	\$13.86M	\$165.39M	\$23.33M	\$89.78M	\$112.22M	\$751.97M
	LIC	\$292.70M		\$74.38M				\$367.08M
	Total	\$708.87M	\$3,762.48M	\$408.93M	\$1,374.38M	\$128.71M	\$580.56M	\$6,963.94M
PPSV	HIC		\$585.32M	\$0.05M	\$0.66M		\$0.57M	\$586.60M
	UMIC		\$0.27M				\$5.72M	\$5.99M
	LMIC		\$0.00M				\$0.06M	\$0.07M
	Total		\$585.59M	\$0.05M	\$0.66M		\$6.36M	\$592.66M
Rota	HIC	\$0.09M	\$1,261.86M	\$60.44M	\$678.50M		\$259.95M	\$2,260.83M
	UMIC	\$16.67M	\$65.38M	\$19.53M	\$32.58M	\$16.07M	\$0.29M	\$150.52M
	LMIC	\$41.10M	\$1.59M	\$28.72M	\$3.76M	\$66.83M	\$0.17M	\$142.17M
	LIC	\$37.44M		\$9.26M				\$46.71M
	Total	\$95.30M	\$1,328.83M	\$117.95M	\$714.84M	\$82.90M	\$260.41M	\$2,600.23M
TCV	UMIC	\$6.81M				\$3.23M	\$0.79M	\$10.83M
	LMIC	\$0.64M		\$7.66M		\$1.62M	\$6.81M	\$16.73M
	LIC	\$7.43M						\$7.43M
	Total	\$14.88M		\$7.66M		\$4.85M	\$7.61M	\$34.99M
Td	HIC	\$0.04M	\$12.67M	\$7.39M	\$14.14M		\$5.23M	\$39.48M
	UMIC	\$2.72M	\$7.94M	\$1.13M	\$11.36M	\$3.99M	\$0.05M	\$27.19M
	LMIC	\$7.04M	\$0.40M	\$9.71M	\$0.40M	\$1.33M	\$3.40M	\$22.29M
	LIC	\$6.33M		\$1.78M				\$8.11M
	Total	\$16.14M	\$21.01M	\$20.01M	\$25.90M	\$5.32M	\$8.69M	\$97.07M
Td-IPV	HIC				\$0.66M			\$0.66M
	Total				\$0.66M			\$0.66M
Tdap	HIC		\$183.74M	\$13.45M	\$185.54M		\$29.43M	\$412.17M
	UMIC	\$0.58M	\$34.68M	\$1.49M	\$0.95M			\$37.70M

Vaccine	WB Status	AFR	AMR	EMR	EUR	SEAR	WPR	Grand Total
Tdap	Total	\$0.58M	\$218.42M	\$14.94M	\$186.50M		\$29.43M	\$449.87M
Tdap-IPV	HIC				\$206.01M			\$206.01M
	UMIC	\$0.18M		\$1.36M				\$1.54M
	Total	\$0.18M		\$1.36M	\$206.01M			\$207.55M
TT	HIC			\$0.33M	\$0.40M		\$0.02M	\$0.76M
	UMIC	\$0.84M	\$0.05M	\$0.83M	\$1.14M		\$0.77M	\$3.64M
	LMIC					\$0.04M	\$0.41M	\$0.45M
	Total	\$0.84M	\$0.05M	\$1.16M	\$1.54M	\$0.04M	\$1.20M	\$4.84M
Typhoid Ps	HIC		\$1.07M	\$0.03M	\$0.04M		\$0.01M	\$1.15M
	UMIC	\$0.00M	\$1.53M		\$0.01M		\$0.02M	\$1.56M
	LMIC					\$0.01M		\$0.01M
	Total	\$0.00M	\$2.60M	\$0.03M	\$0.05M	\$0.01M	\$0.03M	\$2.72M
Varicella	HIC		\$674.38M	\$41.15M	\$178.44M		\$204.01M	\$1,097.99M
	UMIC		\$79.26M		\$22.33M		\$810.98M	\$912.56M
	Total		\$753.64M	\$41.15M	\$200.78M		\$1,014.99M	\$2,010.55M
YF	HIC	\$0.09M	\$0.11M					\$0.20M
	UMIC	\$2.49M	\$32.60M			\$0.28M		\$35.37M
	LMIC	\$56.77M	\$0.42M					\$57.18M
	LIC	\$77.06M		\$2.84M				\$79.90M
	Total	\$136.41M	\$33.13M	\$2.84M		\$0.28M		\$172.65M
Grand Total		\$2,232.29M	\$18,912.68M	\$2,182.79M	\$9,939.18M	\$2,649.96M	\$13,196.56M	\$49,113.45M

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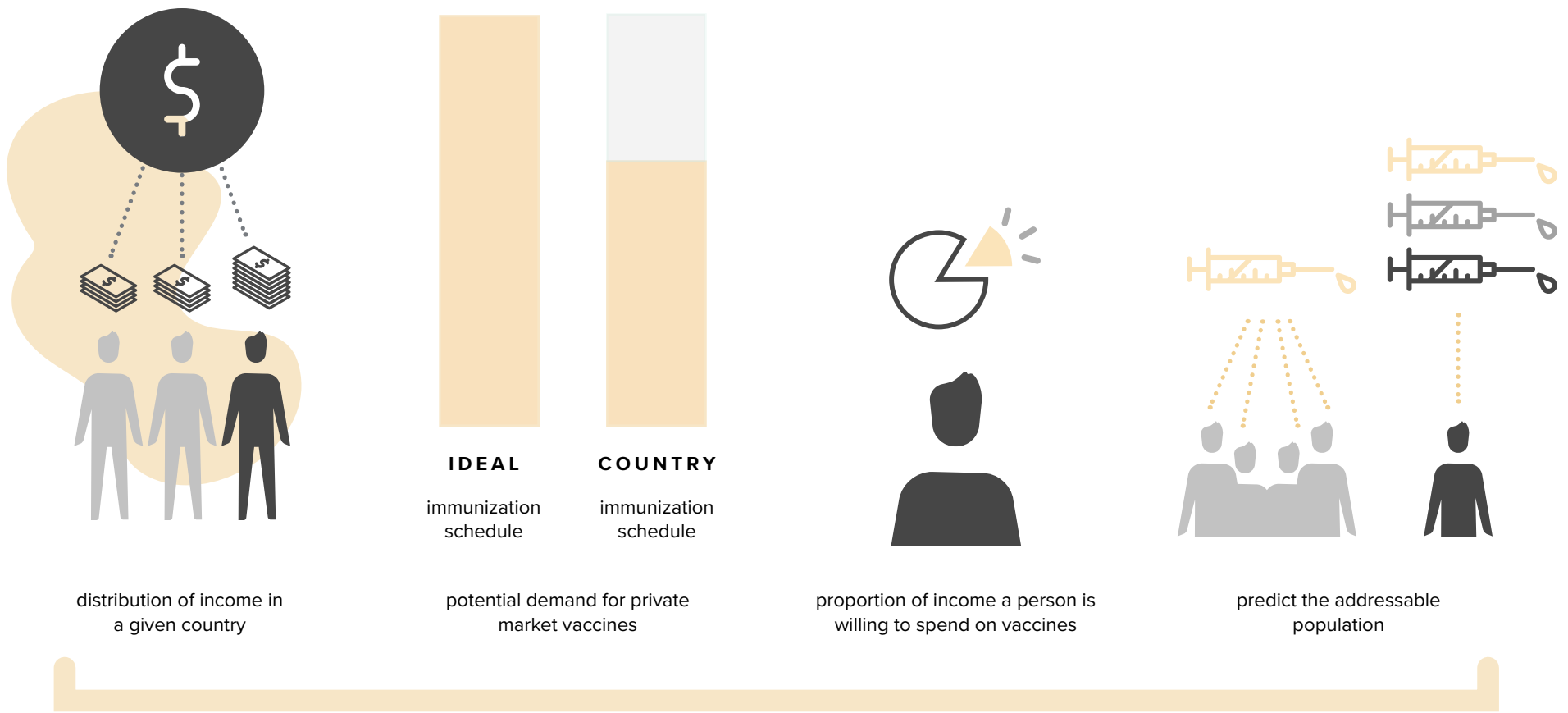
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7.0 PRIVATE MARKETS

This section includes data outputs and visuals from a new simulation developed to quantify the potential value of the private market for vaccines.



PRIVATE MARKET VALUE

This section includes data outputs and visuals from a new simulation developed to quantify the potential value of the private market for vaccines. The simulation estimates the number of people in each country who are modeled to be willing and able to purchase a vaccine not currently offered in the national expanded program on immunization, produced by a multinational corporation (MNC) at an average private market price. These results represent demand unconstrained by supply (globally and at the country level).

What's In? (Inclusions)

- LIC private markets
- LMIC private markets
- UMIC private markets
- Non-U.S. HIC private markets
- Travelers
- Military
- Select adult markets
 - Shingles
 - PPSV

What's Out? (Exclusions)

- U.S. private markets
- Global special groups (immunocompromised)
- Candidate vaccines (GBS, HIV, malaria, RSV)

The simulation logic (and data sources) are described below:

- Plot income share data (World Bank) and adult population data (UNPD) to understand the distribution of income in a given country
- Estimate the potential demand for private market vaccines as the differential between a country's public schedule and a predetermined ideal vaccine schedule based on highest-income countries (GVMM)
- Match per capita health spending data with income data to determine the proportion of income a person is willing to spend on vaccines (World Bank)
- Use a multilevel nonlinear regression model to predict the target population in a given country based on a person's ability and willingness to pay current private market vaccine prices (GVMM, CDC)
- Quantify private market value by multiplying the addressable population (UNPD) by the number of estimated doses purchased

The flexibility of the simulation allows us to estimate the increase in demand for private market vaccines at lower price points (see pages 82-84). This increase represents a potential latent market for DCVMs to sell their products to middle-income families in low-and middle-income countries. Future iterations of this model will account for DCVM shares as well as supply constraints within these vaccine markets.

The simulation also includes an additional module for traveler markets and military markets. The traveler and military market module logic and data sources are described below. Future iterations will include a module for hospital markets.

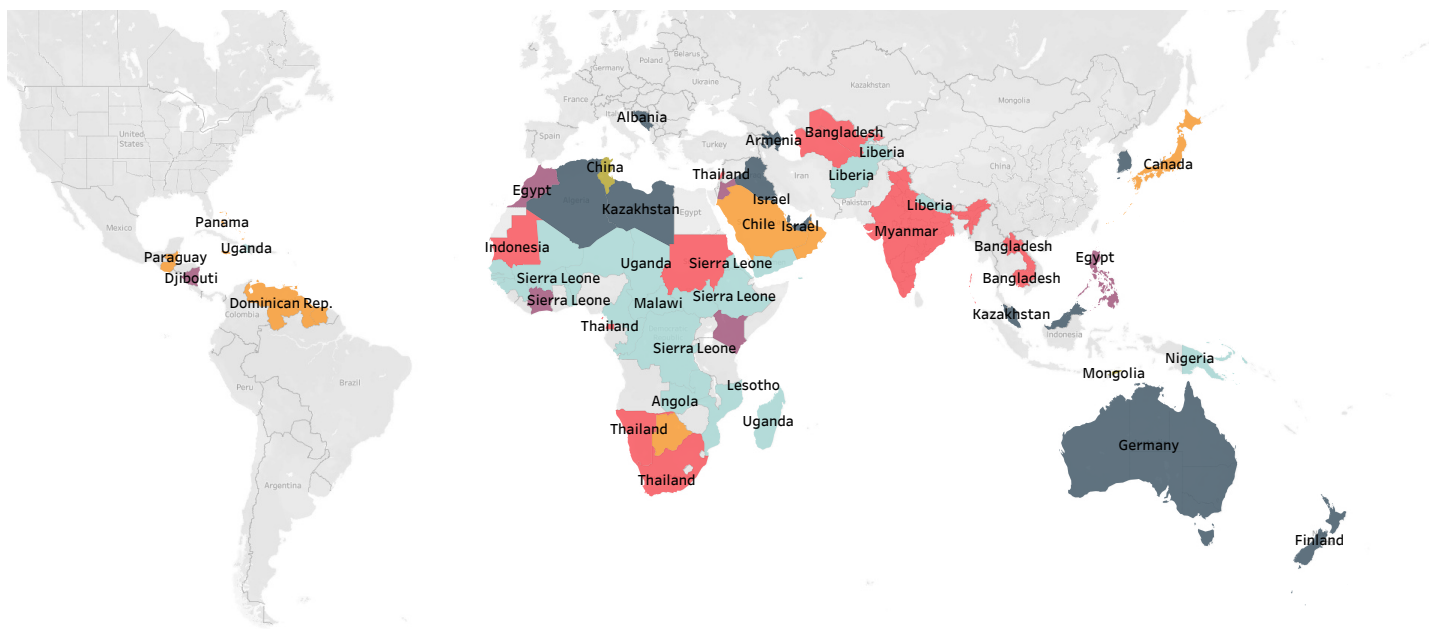
Traveler market:

- Estimate the total number of travelers to countries where vaccinations are required or recommended for travel, by WHO region, assuming pre-Covid-19 traveling rates (UN World Tourism Organization [UNWTO])
- Exclude the proportion of travelers from each region that are likely to have been routinely vaccinated against relevant diseases (GVMM)
- Apply a discount by region to account for the proportion of travelers that are likely to be "recurring" visitors (i.e., assumed to have received the vaccine upon the first visit), adjusted for the length of immunity provided by each vaccine (UNWTO)
- Apply a discount to account for the proportion of travelers that are likely to refuse vaccination (for various reasons) based on literature reviews (Lammert et al. [2016]; Deshpande et al. [2014])
- Calculate total number of doses and subsequent market value based on the recommended vaccination schedule and MNC prices (GVMM)

Military market:

- Estimate the total number of active military recruits in countries with a professional military (International Institute for Strategic Studies, NATO, World Bank)
- Identify the list of necessary vaccinations for military personnel (U.S. DOD)
- Exclude the proportion of recruits in each country that are likely to have been routinely vaccinated against relevant diseases (GVMM)
- Calculate total number of doses and subsequent market value based on the recommended vaccination schedule and MNC prices (GVMM)

Please contact gvm@linksbridge.com for access to the data.



Cosine Similarity Extrapolation Outcome (Methods Description)

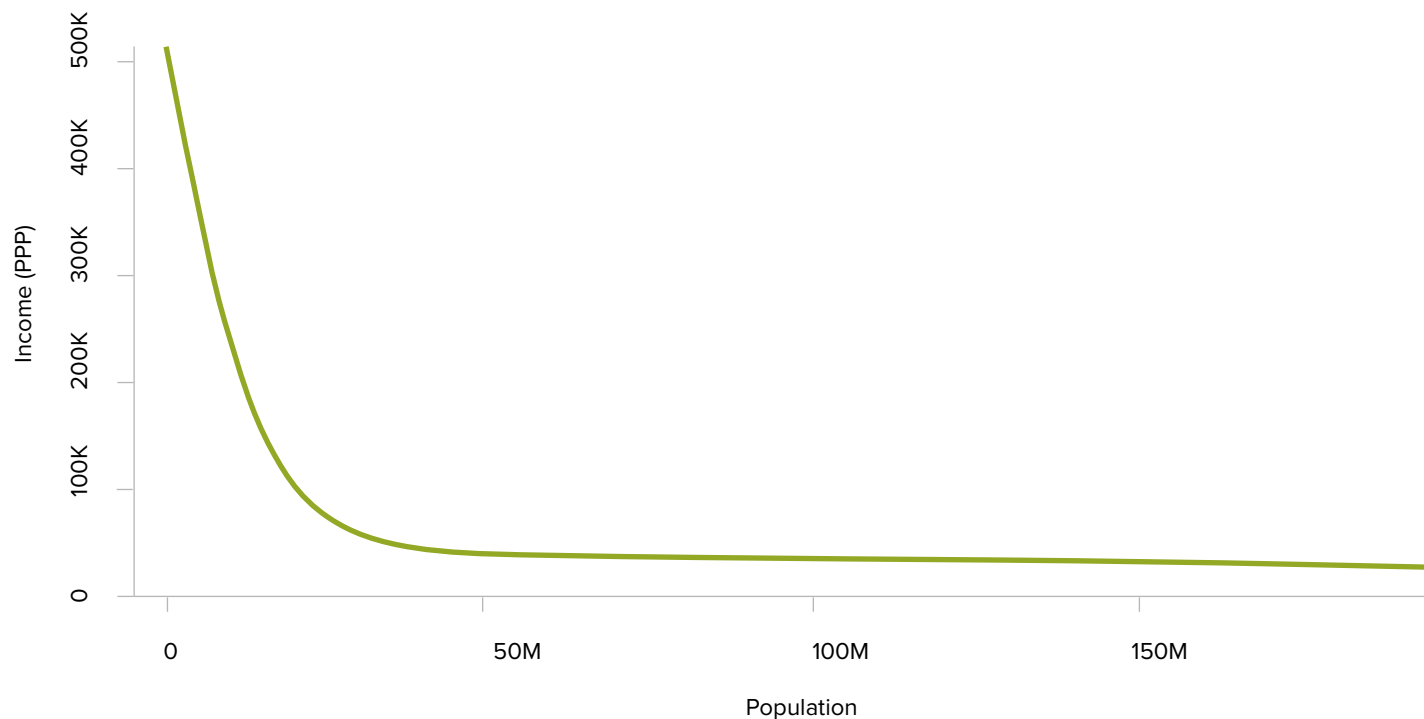
FIGURE 7.1

This map shows the output of a cosine similarity extrapolation exercise used to determine which countries are more highly related.

Source: GVMM, January 2024



In order to calculate the income distribution for all countries (see example below), we had to extrapolate income shares to countries' missing data. We calculated the cosine similarity between countries with data and those without to determine which countries were most highly related to one another. The cosine similarity calculation was based on World Bank status, Gavi Eligibility status, GNI per capita, and existing income inequality metrics. We matched countries without data to those with which they were most highly related.



Brazil Income Distribution (Methods Description)

FIGURE 7.2

This exhibit demonstrates the income distribution curve modeled for Brazil based on income share data, population estimates and gross national income (purchasing power parity) data.

Source: GVMM, January 2024

Using income share data, population estimates and gross national income (purchasing power parity), we modeled each country's income distribution. We can use this model to predict the income of any person within the country, which largely determines their participation in the private market.

Total Non-adult Private (non-traveler) Market Value (2023)
(see simulation exclusions list)

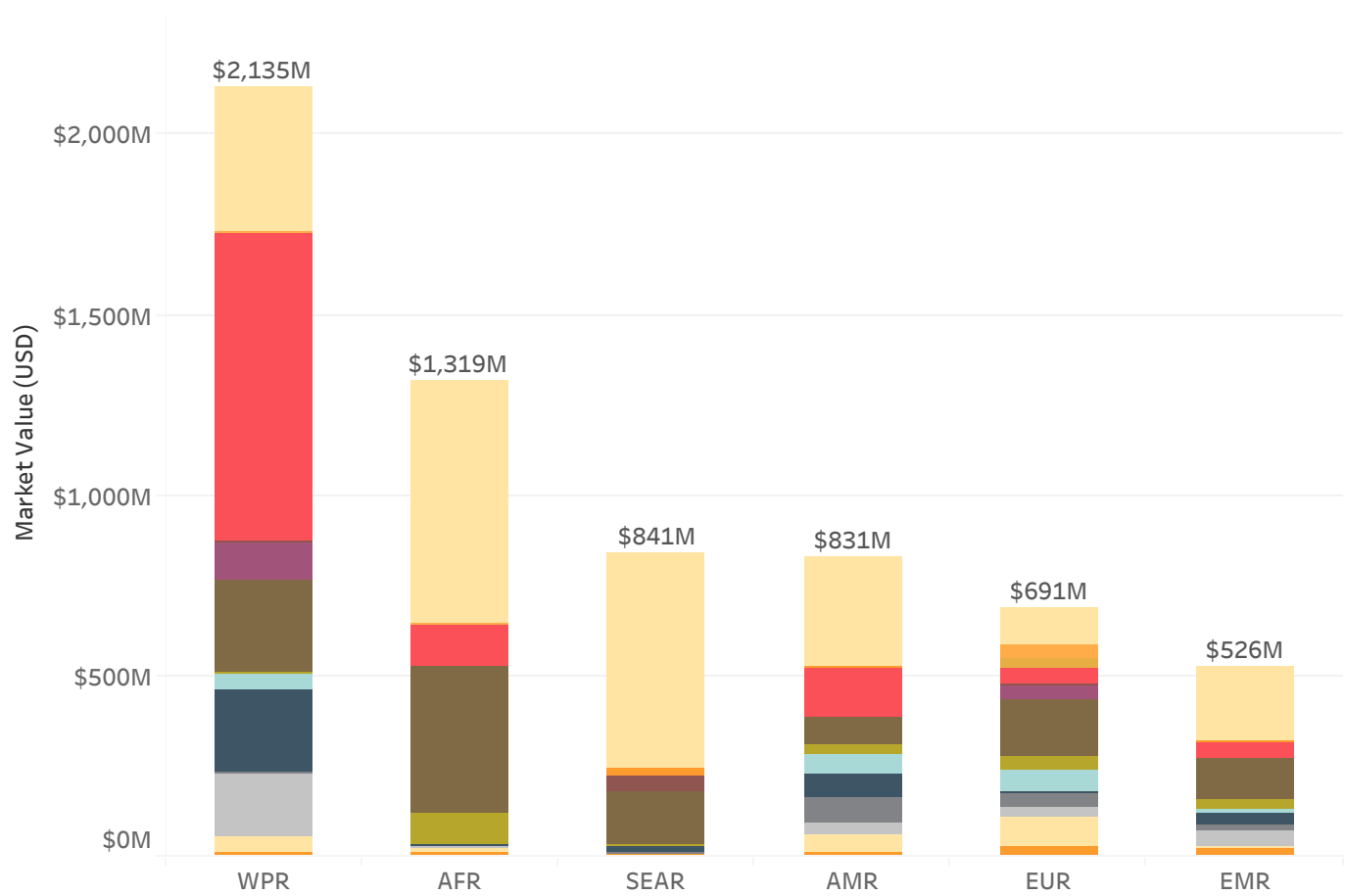
FIGURE 7.3

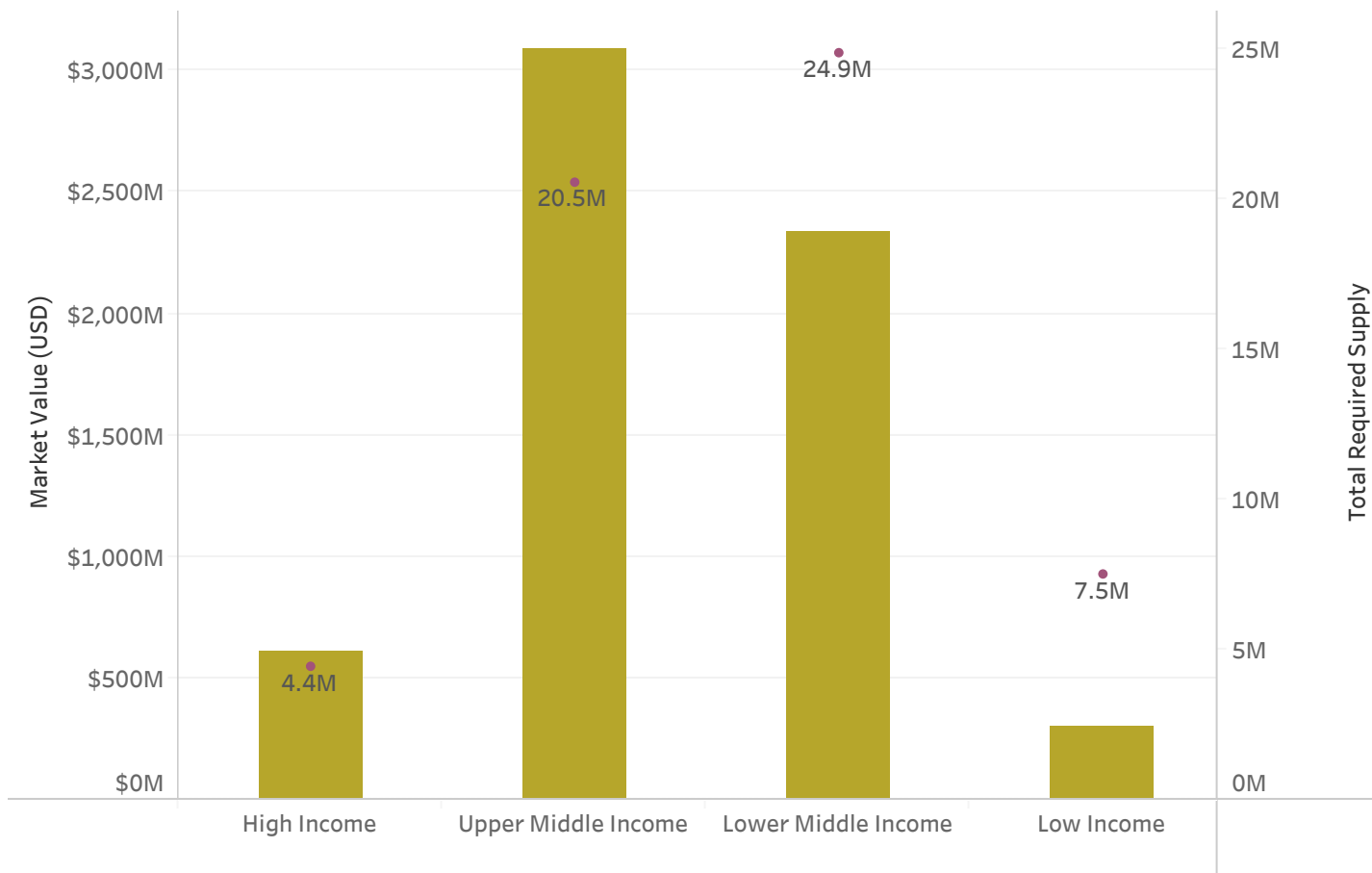
This exhibit summarizes the total potential value of the private market by vaccine and WHO region.

The total potential value of the private market reaches an estimated \$6.3 billion in 2023. Private market value is dominated by the WPR region and aP-containing, HPV, and MCV vaccines.

Source: GVMM, January 2024

- Vaccine
- aP-containing
 - BCG
 - HepA
 - HepB
 - HPV
 - IPV
 - JE
 - MCV
 - MenACYW-135
 - MenB
 - PCV
 - PPSV23
 - Rota
 - Shingles
 - Varicella
 - YF





Total Non-adult Private (non-traveler) Market Doses and Value (2023) by World Bank Status (see simulation exclusions list)

FIGURE 7.4

This exhibit shows total doses (plot points) and market value (bars) by World Bank status.

Upper Middle Income countries (UMICs) comprise the majority of the potential private market in terms of value, whereas Lower Middle Income countries (LMICs) capture more demand for lower-cost vaccines.

Source: GVMM, January 2024

This section summarizes the simulation’s ability to estimate demand and potential market value of vaccines at reduced price points.

To estimate the effect of lower price points on market value, three pricing scenarios are used: average MNC private market vaccine prices, a 25% price reduction, and a 50% price reduction.

This approach computes three demand and market value estimates for all included LICs and LMICs.

For a more in-depth view of how price impacts market value, the simulation uses nine additional pricing scenarios in a LIC (Uganda) and LMIC (Nigeria).

Future iterations of this analysis will include an optimization model to determine the price points that maximize market value and demand for each vaccine.

Total Non-adult Private (non-traveler) Market Doses and Value (2023) by Price Scenario

FIGURE 7.5

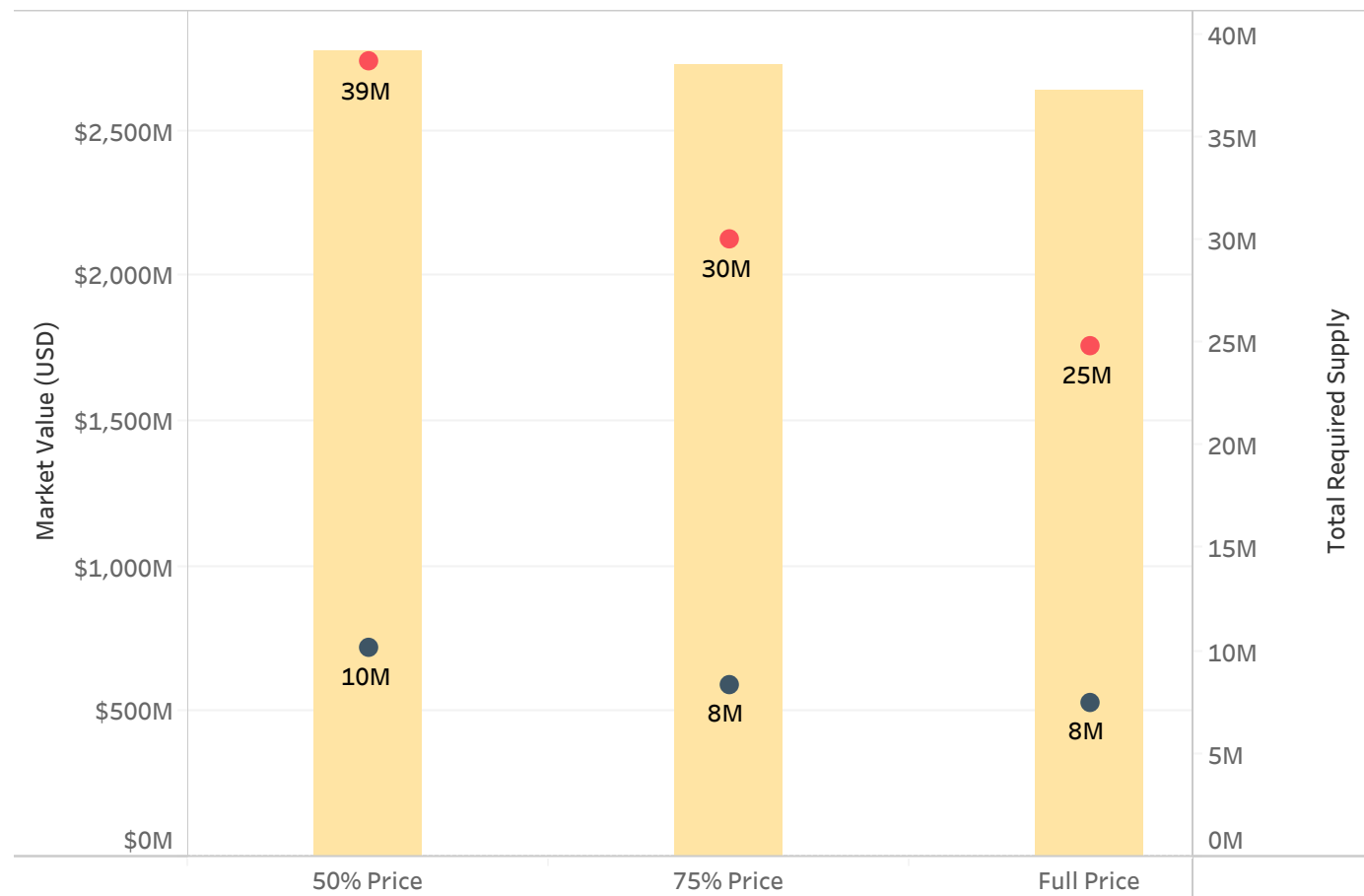
This exhibit compares demand and market value across three pricing scenarios in LICs and LMICs. The simulation shows greater total required supply at reduced prices, and that market value increases with demand.

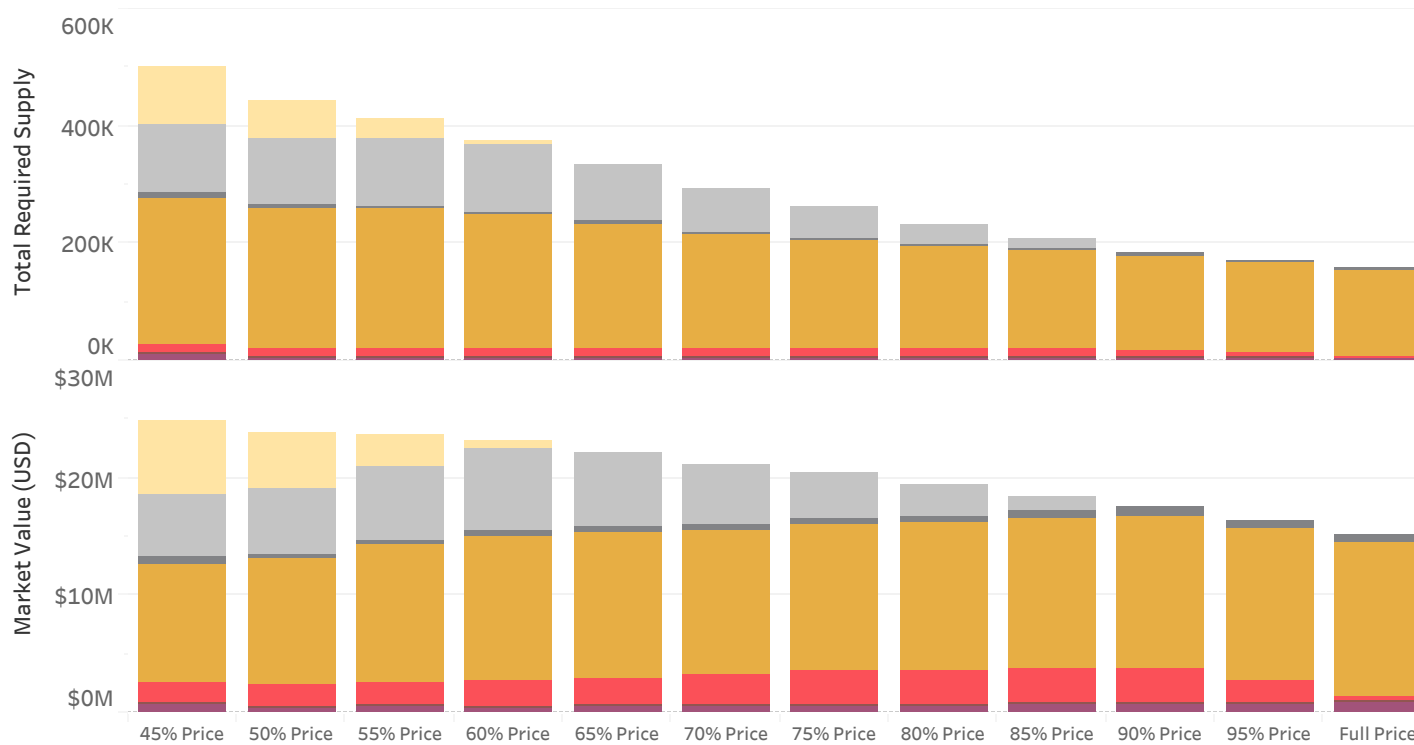
Estimated market value is greatest when vaccine prices are reduced to 50% and total demand (for LIC and LMIC combined) is 49 million doses compared to a 25% price reduction with total demand of 38 million doses.

This suggests that the optimal price point is at least half price.

Source: GVMM, January 2024

Income Status
 ■ LIC
 ■ LMIC



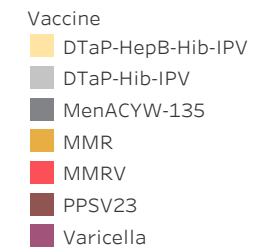


Uganda - Total Non-adult Private (non-traveler) Market Doses and Value (2023) by Price Scenario

FIGURE 7.6

This exhibit compares the potential demand and market value of vaccines in Uganda at 12 price points.

Source: GVMM, January 2024

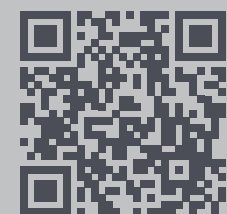


- From the full price point to the lowest price point, the estimated private market value increases by 64%.
- Offering DTaP-HepB-Hib-IPV and DTaP-Hib-IPV at more affordable prices significantly increases the demand for these vaccines, increasing overall market value.
- At the half-price threshold, the simulation models how the more favored and expensive DTaP-HepB-Hib-IPV reduces the market share of DTaP-Hib-IPV.

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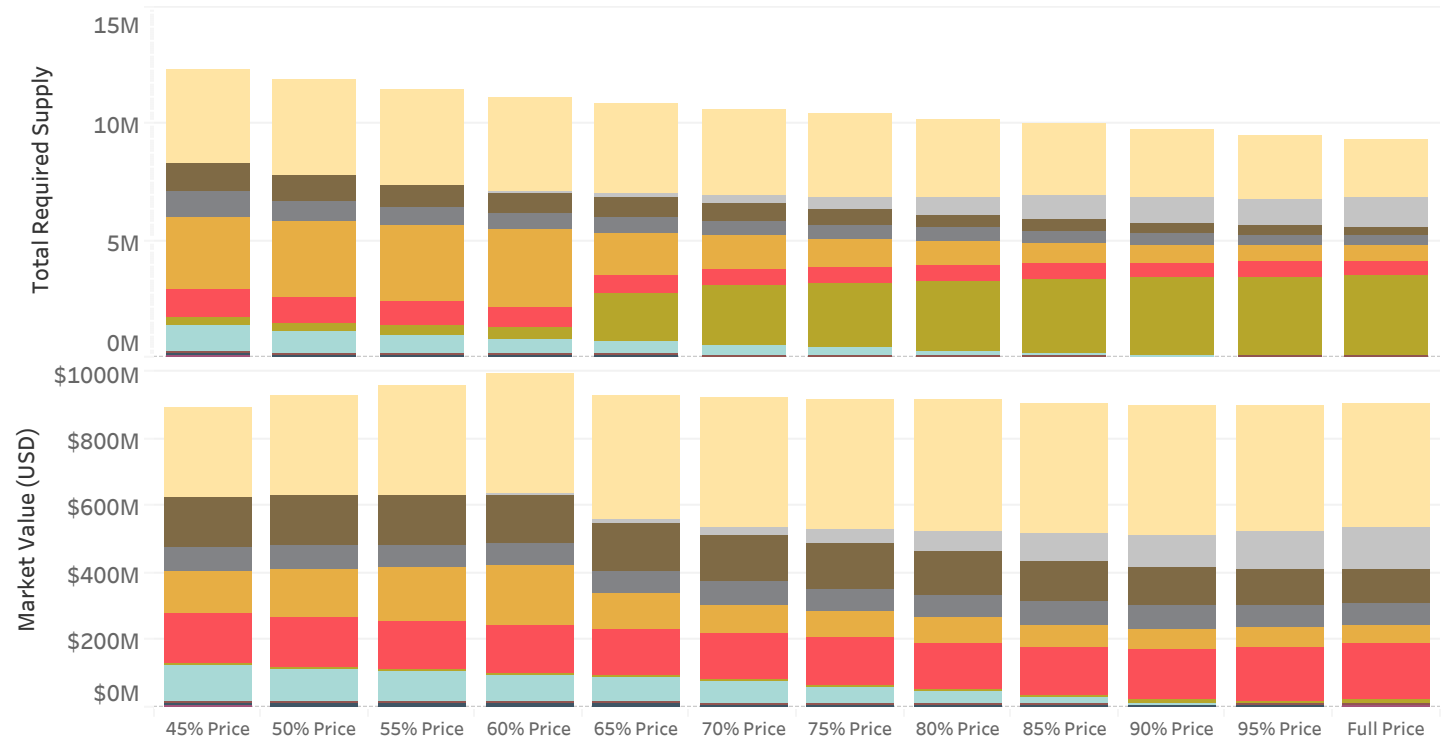
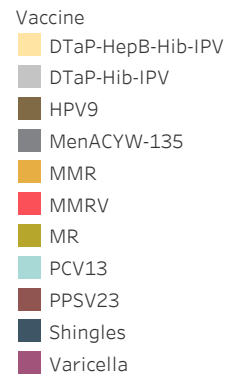


Nigeria - Total Non-adult Private (non-traveler) Market Doses and Value (2023) by Price Scenario

FIGURE 7.7

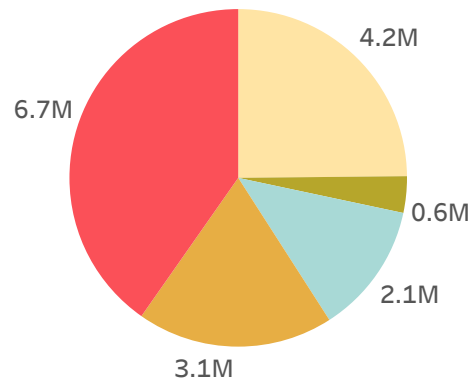
This exhibit compares the potential demand and market value of vaccines in Nigeria at 12 price points.

Source: GVMM, January 2024

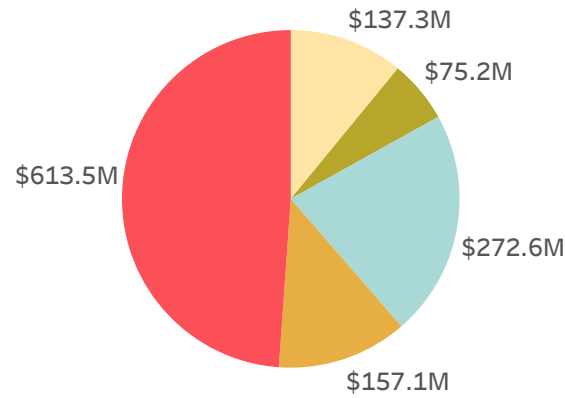


- Although demand increases as price decreases, market value does not increase at each price level.
- Price points 50% - 80% estimate a greater market value compared to the full price point. At the 60% price point, market value increases by \$85.6 million USD, and overall demand increases by almost 2 million doses.
- Although overall market value begins to decrease below the 60% price point, market value increases for HPV9, MenACYW-135, MMRV, and PCV13.

Global Traveler Market Doses



Global Traveler Market Value (USD)



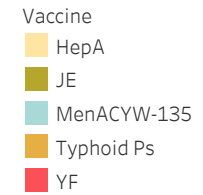
Global Traveler Market Doses and Value (2023)

FIGURE 7.8

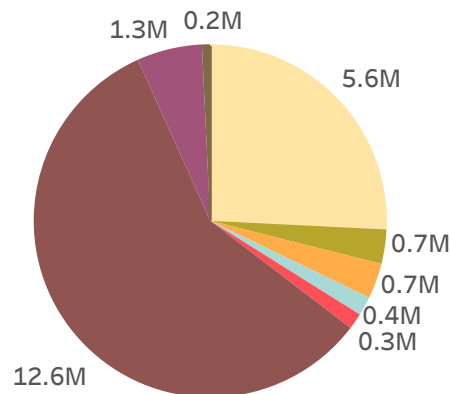
This exhibit shows global traveler market doses and value (in USD) in 2023 for HepA, JE, Meningococcal, Typhoid Ps, and YF.

Yellow fever vaccine leads the market in terms of value and total required supply, due to consistent travel to YF-endemic countries.

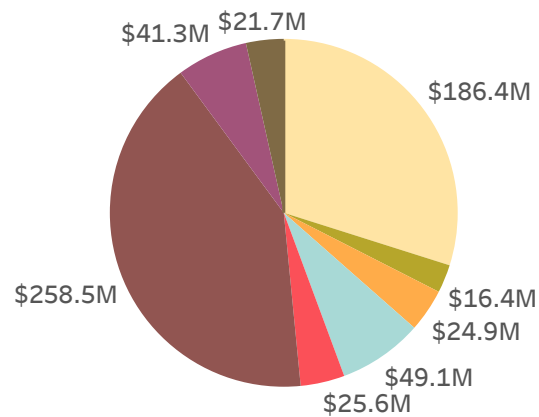
Source: GVMM, January 2024



Global Military Market Doses



Global Military Market Value (USD)



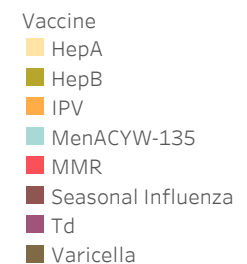
Global Military Market Doses and Value (2023)

FIGURE 7.9

This exhibit shows total doses and value for vaccines for the top 15 countries with the greatest military spending along with NATO countries.

Seasonal influenza leads the military market both in terms of volume and value, given that it is administered annually to all personnel.

Source: GVMM, January 2024





8.0 **READY REFERENCE**

This section expands previous sections to include more detailed information on vaccine demand, supply, and price.

Country Reference

FIGURE 8.1

This exhibit provides an overview of countries' income, population and health indicators in 2023.

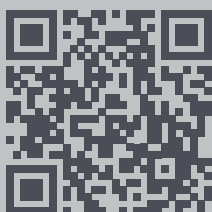
Source: World Bank; UNPD; WHO

Country	WHO Region	Current WB Status	GNI Per Capita (USD)	Birth Cohort	Population	Infant Mortality Rate (per 1,000 live births)	Under-5 Mortality (per 1,000 live births)
Afghanistan	EMRO	LIC	390	1,404,214	42,239,810	43	56
Albania	EURO	UMIC	6,770	28,337	2,832,213	8	9
Algeria	AFRO	LMIC	3,900	896,235	45,606,052	19	22
Angola	AFRO	LMIC	1,900	1,319,022	36,684,046	47	69
Antigua	AMRO	HIC	18,280	1,115	94,260	5	6
Argentina	AMRO	UMIC	11,620	621,668	45,760,661	6	7
Armenia	EURO	UMIC	5,960	31,779	2,777,821	10	11
Australia	WPRO	HIC	60,430	302,510	26,431,831	3	4
Austria	EURO	HIC	56,140	84,407	8,957,065	3	4
Azerbaijan	EURO	UMIC	5,630	120,328	10,412,562	17	19
Bahamas	AMRO	HIC	31,530	4,645	412,554	11	13
Bahrain	EMRO	HIC	27,180	16,676	1,485,476	6	7
Bangladesh	SEARO	LMIC	2,820	2,934,946	172,953,222	23	27
Barbados	AMRO	HIC	19,350	2,996	281,955	11	12
Belarus	EURO	UMIC	7,240	86,435	9,497,013	2	3
Belgium	EURO	HIC	48,700	117,015	11,683,267	3	4
Belize	AMRO	UMIC	6,800	7,159	410,788	10	11
Benin	AFRO	LMIC	1,400	463,566	13,712,775	55	84
Bhutan	SEARO	LMIC	3,040	9,471	787,386	22	27
Bolivia	AMRO	LMIC	3,450	258,279	12,388,494	20	25
Bosnia	EURO	UMIC	7,660	26,403	3,210,513	5	6
Botswana	AFRO	UMIC	7,350	58,730	2,675,290	28	35
Brazil	AMRO	UMIC	8,140	2,684,857	216,419,987	13	14
Brunei	WPRO	HIC	31,410	5,961	452,493	10	11
Bulgaria	EURO	UMIC	13,250	55,744	6,687,389	5	6
Burkina Faso	AFRO	LIC	840	766,321	23,251,454	52	83
Burundi	AFRO	LIC	240	427,695	13,238,527	38	53
Cabo Verde	AFRO	LMIC	4,140	9,738	598,637	12	14
Cambodia	WPRO	LMIC	1,700	309,774	16,944,715	21	25
Cameroon	AFRO	LMIC	1,660	928,750	28,647,159	47	70
Canada	AMRO	HIC	52,960	380,640	38,767,898	4	5
CAR	AFRO	LIC	480	228,387	5,742,289	75	100
Chad	AFRO	LIC	690	734,199	18,278,521	66	107
Chile	AMRO	HIC	15,360	226,408	19,624,711	6	7
China	WPRO	UMIC	12,850	10,650,441	1,425,618,848	5	7
Colombia	AMRO	UMIC	6,510	709,416	52,083,735	11	13
Comoros	AFRO	LMIC	1,610	23,329	852,047	39	50
Congo	AFRO	LMIC	2,060	175,683	6,106,837	32	43
Costa Rica	AMRO	UMIC	12,670	60,049	5,211,974	6	8
Cote d'Ivoire	AFRO	LMIC	2,620	911,056	28,872,846	56	75
Croatia	EURO	HIC	19,470	33,612	4,008,092	4	5
Cuba	AMRO	UMIC	8,920	98,879	11,192,090	4	5
Cyprus	EURO	HIC	30,540	12,490	1,259,971	2	3
Czech Rep.	EURO	HIC	26,590	100,893	10,494,212	2	3
Denmark	EURO	HIC	73,200	64,716	5,909,574	3	4
Djibouti	EMRO	LMIC	3,180	23,868	1,136,426	46	54
Dominican Rep.	AMRO	UMIC	9,050	197,409	11,331,707	27	33
DRC	AFRO	LIC	590	4,018,191	102,262,690	62	79
Ecuador	AMRO	UMIC	6,310	295,512	18,189,424	11	12
Egypt	EMRO	LMIC	4,100	2,416,585	112,716,224	16	19

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Country	WHO Region	Current WB Status	GNI Per Capita (USD)	Birth Cohort	Population	Infant Mortality Rate (per 1,000 live births)	Under-5 Mortality (per 1,000 live births)
El Salvador	AMRO	UMIC	4,720	98,764	6,364,436	11	12
Equatorial Guinea	AFRO	UMIC	5,320	48,139	1,714,631	57	77
Eritrea	AFRO	LIC	605	102,765	3,748,876	29	38
Estonia	EURO	HIC	27,640	13,227	1,322,445	2	2
Eswatini	AFRO	LMIC	3,800	27,419	1,210,786	41	53
Ethiopia	AFRO	LIC	1,020	3,841,190	126,526,810	34	47
Fiji	WPRO	UMIC	5,270	17,405	936,343	23	28
Finland	EURO	HIC	54,360	47,299	5,544,257	2	2
France	EURO	HIC	45,860	664,314	64,723,251	3	4
Gabon	AFRO	UMIC	7,540	62,280	2,436,502	29	40
Gambia	AFRO	LIC	810	86,854	2,773,139	34	48
Georgia	EURO	UMIC	5,620	47,928	3,728,137	8	9
Germany	EURO	HIC	53,390	758,855	83,269,035	3	4
Ghana	AFRO	LMIC	2,350	883,263	34,121,897	33	44
Greece	EURO	HIC	21,740	76,481	10,338,687	3	4
Grenada	AMRO	UMIC	9,340	1,919	126,145	14	16
Guatemala	AMRO	UMIC	5,350	366,046	18,090,752	20	23
Guinea	AFRO	LMIC	1,180	448,130	14,190,559	64	99
Guinea-Bissau	AFRO	LIC	820	62,046	2,150,809	50	74
Guyana	AMRO	HIC	15,050	15,640	813,742	23	28
Haiti	AMRO	LMIC	1,610	258,213	11,724,730	45	59
Honduras	AMRO	LMIC	2,740	214,859	10,593,736	14	17
Hungary	EURO	HIC	19,010	101,488	10,154,871	3	4
Iceland	EURO	HIC	68,220	4,561	375,239	2	3
India	SEARO	LMIC	2,380	22,539,040	1,428,584,593	25	31
Indonesia	SEARO	UMIC	4,580	4,377,655	277,532,488	19	22
Iran	EMRO	LMIC	3,900	1,148,059	89,172,017	11	13
Iraq	EMRO	UMIC	5,270	1,189,225	45,504,460	21	25
Ireland	EURO	HIC	81,070	57,187	5,055,869	3	3
Israel	EURO	HIC	54,650	174,397	9,172,014	3	3
Italy	EURO	HIC	37,700	406,980	58,848,855	2	3
Jamaica	AMRO	UMIC	5,670	31,968	2,825,493	11	12
Japan	WPRO	HIC	42,440	814,676	123,154,417	2	2
Jordan	EMRO	LMIC	4,260	238,350	11,336,977	13	15
Kazakhstan	EURO	UMIC	9,470	395,967	19,606,420	9	10
Kenya	AFRO	LMIC	2,170	1,460,475	55,097,620	28	37
Kiribati	WPRO	LMIC	3,280	3,388	133,492	38	48
Kuwait	EMRO	HIC	39,570	40,578	4,310,068	7	9
Kyrgyz Republic	EURO	LMIC	1,410	151,654	6,735,289	16	17
Laos	WPRO	LMIC	2,360	156,776	7,633,680	34	43
Latvia	EURO	HIC	21,500	16,094	1,829,764	3	4
Lebanon	EMRO	LMIC	4,970	75,449	5,353,769	7	8
Lesotho	AFRO	LMIC	1,260	56,506	2,330,251	57	73
Liberia	AFRO	LIC	680	158,550	5,418,349	57	76
Libya	EMRO	UMIC	7,260	116,178	6,888,295	9	11
Lithuania	EURO	HIC	23,690	25,619	2,717,716	3	3
Luxembourg	EURO	HIC	91,200	6,763	654,616	2	3
Madagascar	AFRO	LIC	510	887,381	30,325,645	45	66
Malawi	AFRO	LIC	640	656,100	20,931,045	31	42
Malaysia	WPRO	UMIC	11,780	506,486	34,307,186	6	8

Country	WHO Region	Current WB Status	GNI Per Capita (USD)	Birth Cohort	Population	Infant Mortality Rate (per 1,000 live births)	Under-5 Mortality (per 1,000 live births)
Maldives	SEARO	UMIC	11,030	6,910	520,968	5	6
Mali	AFRO	LIC	850	901,568	23,293,670	62	97
Mauritania	AFRO	LMIC	2,160	151,912	4,862,937	32	40
Mauritius	AFRO	UMIC	10,760	13,083	1,300,431	15	17
Mexico	AMRO	UMIC	10,410	1,843,102	128,446,180	11	13
Micronesia	WPRO	LMIC	4,130	2,330	115,199	21	25
Moldova	EURO	UMIC	5,340	45,554	3,435,735	12	14
Mongolia	WPRO	LMIC	4,210	67,889	3,447,068	13	15
Montenegro	EURO	UMIC	10,400	6,798	626,397	2	2
Morocco	EMRO	LMIC	3,710	631,428	37,839,801	15	18
Mozambique	AFRO	LIC	500	1,152,001	33,897,291	51	70
Myanmar	SEARO	LMIC	1,210	885,294	54,577,870	34	42
Namibia	AFRO	UMIC	4,880	67,314	2,604,088	29	39
Nepal	SEARO	LMIC	1,340	603,433	30,896,335	23	27
Netherlands	EURO	HIC	57,430	181,929	17,615,596	4	4
New Zealand	WPRO	HIC	48,460	64,128	5,226,604	4	5
Nicaragua	AMRO	LMIC	2,090	137,024	7,046,256	11	13
Niger	AFRO	LIC	610	1,158,473	27,202,815	60	115
Nigeria	AFRO	LMIC	2,140	7,627,491	223,804,428	71	111
North Macedonia	EURO	UMIC	6,640	19,774	2,085,615	5	5
Norway	EURO	HIC	95,510	54,591	5,473,057	2	2
Oman	EMRO	HIC	20,150	79,680	4,644,340	9	10
Pakistan	EMRO	LMIC	1,580	6,180,996	240,485,555	53	63
Panama	AMRO	HIC	16,750	75,903	4,467,145	12	14
Papua New Guinea	WPRO	LMIC	2,730	247,091	10,329,871	34	43
Paraguay	AMRO	UMIC	5,920	135,500	6,861,065	16	18
Peru	AMRO	UMIC	6,770	584,660	34,351,765	11	14
Philippines	WPRO	LMIC	3,950	2,451,006	117,336,344	20	26
Poland	EURO	HIC	18,350	407,377	41,020,679	4	4
Portugal	EURO	HIC	25,800	79,749	10,244,939	3	3
Qatar	EMRO	HIC	70,500	24,112	2,716,361	5	5
Romania	EURO	HIC	15,660	207,319	19,891,833	5	6
Russia	EURO	UMIC	12,830	1,377,924	144,430,755	4	5
Rwanda	AFRO	LIC	930	398,090	14,094,512	30	39
Saint Lucia	AMRO	UMIC	11,160	2,002	180,222	22	25
Saint Vincent	AMRO	UMIC	9,110	1,297	103,663	13	14
Samoa	WPRO	LMIC	3,630	5,920	225,656	14	17
Sao Tome	AFRO	LMIC	2,410	6,328	231,831	12	15
Saudi Arabia	EMRO	HIC	27,590	608,657	36,946,714	6	7
Senegal	AFRO	LMIC	1,640	549,054	17,763,136	29	39
Serbia	EURO	UMIC	9,140	65,471	7,148,435	5	5
Seychelles	AFRO	HIC	14,340	1,582	107,629	12	14
Sierra Leone	AFRO	LIC	510	252,645	8,791,055	78	105
Singapore	WPRO	HIC	67,200	42,820	6,013,834	2	2
Slovak Republic	EURO	HIC	22,060	60,197	5,794,667	5	6
Slovenia	EURO	HIC	30,600	18,688	2,119,245	2	2
Solomon Islands	WPRO	LMIC	2,220	21,014	740,395	16	19
Somalia	EMRO	LIC	470	727,486	18,143,332	71	112
South Africa	AFRO	UMIC	6,780	1,121,712	60,410,732	26	33
South Korea	WPRO	HIC	35,990	286,692	51,774,321	2	3

Country	WHO Region	Current WB Status	GNI Per Capita (USD)	Birth Cohort	Population	Infant Mortality Rate (per 1,000 live births)	Under-5 Mortality (per 1,000 live births)
South Sudan	AFRO	LIC	1,040	303,302	11,088,773	64	99
Spain	EURO	HIC	31,680	354,125	47,503,196	3	3
Sri Lanka	SEARO	LMIC	3,610	297,050	21,892,952	6	7
Sudan	EMRO	LIC	760	1,508,433	48,108,855	39	55
Suriname	AMRO	UMIC	4,880	10,944	623,155	15	17
Sweden	EURO	HIC	62,990	114,349	10,609,386	2	2
Switzerland	EURO	HIC	89,450	86,704	8,794,655	3	4
Syria	EMRO	LIC	760	473,944	23,226,882	18	22
Tajikistan	EURO	LMIC	1,210	252,372	10,143,482	28	31
Tanzania	AFRO	LMIC	1,200	2,303,483	67,437,469	34	47
Thailand	SEARO	UMIC	7,230	624,122	71,767,195	7	8
Timor-Leste	SEARO	LMIC	1,970	32,142	1,360,564	43	51
Togo	AFRO	LIC	990	270,186	9,053,772	43	63
Tonga	WPRO	UMIC	4,930	2,420	107,744	10	11
Trinidad	AMRO	HIC	16,330	16,988	1,534,709	15	16
Tunisia	EMRO	LMIC	3,840	188,354	12,457,925	14	16
Turkiye	EURO	UMIC	10,590	1,212,451	85,813,857	8	9
Turkmenistan	EURO	UMIC	7,080	128,376	6,516,054	36	41
UAE	EMRO	HIC	48,950	92,182	9,516,794	5	6
Uganda	AFRO	LIC	930	1,675,126	48,582,226	31	42
UK	EURO	HIC	48,890	678,115	67,712,896	4	4
Ukraine	EURO	LMIC	4,270	216,400	36,739,704	7	8
Uruguay	AMRO	HIC	18,030	35,456	3,419,967	5	6
USA	AMRO	HIC	76,370	3,736,163	339,892,236	5	6
Uzbekistan	EURO	LMIC	2,190	757,519	35,163,837	13	14
Vanuatu	WPRO	LMIC	3,560	9,343	334,477	20	23
Venezuela	AMRO	UMIC	13,010	446,030	28,838,442	21	24
Viet Nam	WPRO	LMIC	4,010	1,411,505	98,851,565	16	21
Yemen	EMRO	LIC	615	971,576	34,449,791	47	62
Zambia	AFRO	LMIC	1,170	667,740	20,569,667	40	58
Zimbabwe	AFRO	LMIC	1,500	477,469	16,665,152	36	50

Immunization Coverage in MIC and LIC Countries

FIGURE 8.4

This exhibit shows immunization coverage rates for 2016–2022 in low- and middle-income countries based on current World Bank status. This exhibit shows DTP1, DTP3 and MCV1 coverage types only.

Source: WUENIC, 2023



Country	Coverage Type	2016	2017	2018	2019	2020	2021	2022
Afghanistan	DTP1	73%	75%	81%	75%	78%	74%	77%
	DTP3	66%	66%	72%	72%	70%	66%	69%
	MCV1	64%	67%	71%	64%	66%	63%	68%
Albania	DTP1	99%	99%	99%	99%	99%	98%	98%
	DTP3	98%	99%	99%	99%	98%	98%	97%
	MCV1	96%	96%	94%	95%	91%	87%	86%
Algeria	DTP1	96%	95%	96%	95%	94%	92%	91%
	DTP3	91%	91%	91%	88%	84%	81%	77%
	MCV1	94%	88%	80%	80%	80%	79%	79%
Angola	DTP1	74%	68%	74%	67%	61%	57%	53%
	DTP3	59%	56%	63%	57%	51%	45%	42%
	MCV1	45%	42%	50%	51%	44%	36%	37%
Argentina	DTP1	93%	91%	91%	87%	79%	88%	87%
	DTP3	92%	86%	86%	83%	74%	81%	81%
	MCV1	90%	89%	94%	86%	77%	86%	83%
Armenia	DTP1	97%	97%	96%	96%	96%	96%	96%
	DTP3	94%	94%	92%	92%	91%	93%	93%
	MCV1	97%	96%	95%	95%	94%	94%	95%
Azerbaijan	DTP1	98%	97%	96%	96%	85%	92%	90%
	DTP3	97%	95%	95%	94%	79%	89%	83%
	MCV1	98%	98%	96%	98%	82%	93%	93%
Bangladesh	DTP1	99%	99%	99%	99%	99%	99%	99%
	DTP3	98%	98%	98%	98%	98%	98%	98%
	MCV1	97%	97%	97%	97%	97%	97%	97%
Belarus	DTP1	99%	97%	98%	98%	97%	98%	98%
	DTP3	98%	97%	97%	98%	97%	98%	98%
	MCV1	98%	97%	98%	98%	97%	98%	98%
Belize	DTP1	98%	89%	97%	99%	79%	83%	91%
	DTP3	95%	88%	96%	98%	79%	83%	84%
	MCV1	95%	90%	97%	96%	82%	79%	81%
Benin	DTP1	84%	84%	84%	84%	83%	84%	84%
	DTP3	76%	76%	76%	76%	72%	76%	76%
	MCV1	68%	68%	68%	68%	65%	68%	68%
Bhutan	DTP1	99%	99%	98%	99%	96%	99%	98%
	DTP3	98%	98%	97%	97%	95%	98%	98%
	MCV1	97%	97%	97%	97%	93%	97%	97%
Bolivia	DTP1	93%	91%	89%	81%	79%	75%	75%
	DTP3	87%	84%	83%	75%	68%	70%	69%
	MCV1	94%	83%	89%	79%	74%	75%	69%
Bosnia	DTP1	90%	92%	89%	87%	84%	85%	85%
	DTP3	78%	75%	73%	73%	72%	76%	75%
	MCV1	68%	69%	68%	65%	61%	61%	58%
Botswana	DTP1	98%	98%	98%	98%	98%	98%	98%
	DTP3	95%	95%	95%	95%	95%	95%	86%
	MCV1	97%	97%	97%	97%	87%	97%	90%
Brazil	DTP1	95%	92%	87%	79%	88%	74%	84%
	DTP3	89%	83%	87%	70%	77%	68%	77%
	MCV1	95%	87%	92%	91%	79%	73%	81%
Bulgaria	DTP1	94%	96%	94%	96%	94%	92%	94%
	DTP3	92%	92%	92%	93%	91%	89%	91%
	MCV1	92%	94%	93%	95%	88%	89%	91%
Burkina Faso	DTP1	95%	95%	95%	95%	95%	95%	95%
	DTP3	91%	91%	91%	91%	91%	91%	91%
	MCV1	88%	88%	88%	88%	88%	88%	88%
Burundi	DTP1	97%	94%	94%	97%	98%	96%	93%
	DTP3	94%	91%	90%	93%	93%	94%	91%
	MCV1	93%	90%	88%	92%	90%	90%	89%
Cabo Verde	DTP1	96%	97%	99%	96%	93%	93%	97%
	DTP3	96%	96%	98%	96%	93%	93%	93%
	MCV1	93%	96%	99%	98%	95%	95%	95%
Cambodia	DTP1	94%	93%	93%	93%	92%	92%	92%
	DTP3	91%	90%	89%	88%	87%	87%	85%
	MCV1	85%	86%	87%	87%	83%	83%	83%
Cameroon	DTP1	83%	83%	76%	75%	77%	76%	75%
	DTP3	75%	74%	67%	67%	69%	69%	68%
	MCV1	71%	65%	59%	60%	62%	62%	65%
CAR	DTP1	54%	54%	54%	54%	54%	54%	54%

Country	Coverage Type	2016	2017	2018	2019	2020	2021	2022
CAR	DTP3	42%	42%	42%	42%	42%	42%	42%
	MCV1	45%	41%	41%	41%	41%	41%	41%
Chad	DTP1	55%	55%	61%	65%	69%	73%	74%
	DTP3	41%	41%	46%	50%	52%	58%	60%
	MCV1	37%	37%	42%	41%	47%	55%	56%
China	DTP1	99%	99%	99%	99%	99%	99%	99%
	DTP3	99%	99%	99%	99%	99%	99%	99%
	MCV1	99%	99%	99%	99%	99%	99%	99%
Colombia	DTP1	93%	94%	92%	95%	92%	90%	91%
	DTP3	91%	92%	92%	94%	88%	86%	87%
	MCV1	93%	93%	95%	95%	90%	86%	88%
Comoros	DTP1	96%	96%	96%	96%	96%	96%	90%
	DTP3	91%	91%	91%	91%	91%	91%	88%
	MCV1	90%	90%	90%	90%	90%	90%	86%
Congo	DTP1	76%	75%	79%	82%	77%	81%	82%
	DTP3	71%	69%	75%	79%	73%	77%	78%
	MCV1	67%	70%	75%	73%	68%	68%	65%
Costa Rica	DTP1	99%	99%	95%	96%	99%	97%	98%
	DTP3	97%	96%	94%	95%	97%	93%	95%
	MCV1	93%	96%	94%	95%	95%	89%	90%
Cote d'Ivoire	DTP1	98%	93%	95%	92%	84%	85%	85%
	DTP3	87%	83%	84%	81%	75%	76%	76%
	MCV1	73%	70%	75%	73%	66%	68%	65%
Cuba	DTP1	99%	99%	99%	99%	99%	99%	99%
	DTP3	99%	99%	99%	99%	99%	99%	99%
	MCV1	99%	99%	99%	99%	98%	99%	99%
Djibouti	DTP1	74%	83%	91%	90%	76%	70%	70%
	DTP3	68%	76%	84%	85%	70%	59%	59%
	MCV1	75%	81%	86%	83%	62%	50%	50%
Dominican Rep.	DTP1	98%	99%	98%	96%	86%	99%	99%
	DTP3	87%	84%	87%	89%	82%	84%	88%
	MCV1	85%	86%	91%	96%	82%	88%	91%
DRC	DTP1	81%	82%	82%	84%	83%	81%	81%
	DTP3	70%	71%	71%	73%	70%	65%	65%
	MCV1	63%	65%	64%	65%	62%	55%	56%
Ecuador	DTP1	94%	95%	86%	85%	74%	78%	74%
	DTP3	83%	85%	85%	85%	70%	72%	70%
	MCV1	86%	81%	83%	83%	81%	65%	74%
Egypt	DTP1	96%	95%	96%	96%	95%	97%	97%
	DTP3	95%	94%	95%	95%	94%	96%	97%
	MCV1	95%	94%	94%	95%	94%	96%	96%
El Salvador	DTP1	99%	97%	91%	92%	87%	78%	76%
	DTP3	98%	92%	89%	90%	76%	78%	75%
	MCV1	98%	89%	87%	85%	74%	85%	65%
Equatorial Guinea	DTP1	77%	77%	77%	77%	77%	77%	77%
	DTP3	53%	53%	53%	53%	53%	53%	53%
	MCV1	53%	53%	53%	53%	53%	53%	53%
Eritrea	DTP1	97%	97%	97%	97%	97%	97%	97%
	DTP3	95%	95%	95%	95%	95%	95%	95%
	MCV1	95%	93%	93%	93%	93%	93%	93%
Eswatini	DTP1	96%	96%	96%	96%	87%	86%	99%
	DTP3	90%	90%	90%	90%	83%	77%	97%
	MCV1	89%	89%	85%	81%	76%	80%	83%
Ethiopia	DTP1	75%	76%	77%	76%	76%	70%	70%
	DTP3	66%	68%	67%	68%	71%	65%	65%
	MCV1	57%	59%	55%	58%	60%	54%	56%
Fiji	DTP1	98%	92%	95%	97%	99%	99%	99%
	DTP3	95%	91%	94%	97%	99%	99%	99%
	MCV1	97%	99%	95%	96%	96%	99%	99%
Gabon	DTP1	83%	81%	78%	77%	69%	76%	65%
	DTP3	75%	75%	70%	70%	63%	75%	60%
	MCV1	64%	63%	59%	62%	53%	64%	52%
Gambia	DTP1	99%	93%	94%	93%	88%	82%	85%
	DTP3	95%	92%	93%	88%	85%	82%	79%
	MCV1	97%	90%	91%	85%	82%	79%	74%
Georgia	DTP1	97%	98%	99%	99%	95%	97%	95%
	DTP3	92%	91%	93%	94%	88%	85%	85%



Country	Coverage Type	2016	2017	2018	2019	2020	2021	2022
Georgia	MCV1	93%	95%	98%	99%	91%	90%	90%
Ghana	DTP1	94%	99%	97%	97%	94%	99%	99%
	DTP3	93%	99%	97%	97%	94%	98%	99%
	MCV1	89%	95%	92%	92%	88%	94%	95%
Grenada	DTP1	98%	98%	96%	98%	79%	84%	79%
	DTP3	96%	96%	95%	94%	72%	77%	77%
	MCV1	95%	85%	84%	94%	83%	70%	76%
Guatemala	DTP1	99%	98%	94%	92%	92%	89%	92%
	DTP3	83%	91%	85%	85%	83%	79%	79%
	MCV1	89%	94%	89%	90%	88%	81%	83%
Guinea	DTP1	62%	62%	62%	62%	62%	62%	62%
	DTP3	47%	47%	47%	47%	47%	47%	47%
	MCV1	47%	47%	47%	47%	47%	47%	47%
Guinea-Bissau	DTP1	90%	91%	92%	86%	87%	81%	81%
	DTP3	85%	79%	82%	78%	74%	67%	74%
	MCV1	80%	66%	79%	79%	72%	63%	75%
Haiti	DTP1	84%	84%	84%	75%	75%	75%	75%
	DTP3	64%	64%	64%	51%	51%	51%	51%
	MCV1	69%	69%	69%	65%	65%	65%	65%
Honduras	DTP1	98%	92%	93%	89%	85%	82%	80%
	DTP3	95%	90%	91%	88%	80%	77%	78%
	MCV1	98%	98%	91%	89%	82%	81%	77%
India	DTP1	91%	92%	93%	94%	87%	88%	95%
	DTP3	88%	89%	90%	91%	85%	85%	93%
	MCV1	88%	90%	93%	95%	89%	89%	95%
Indonesia	DTP1	90%	90%	90%	90%	83%	74%	87%
	DTP3	84%	85%	85%	85%	77%	67%	85%
	MCV1	88%	90%	89%	88%	76%	72%	84%
Iran	DTP1	99%	99%	99%	99%	99%	98%	99%
	DTP3	99%	99%	99%	99%	99%	98%	99%
	MCV1	99%	99%	99%	99%	99%	99%	99%
Iraq	DTP1	71%	89%	95%	93%	90%	89%	99%
	DTP3	71%	81%	86%	84%	74%	78%	93%
	MCV1	79%	81%	85%	82%	76%	75%	88%
Jamaica	DTP1	99%	95%	99%	97%	97%	93%	99%
	DTP3	99%	93%	97%	96%	96%	90%	98%
	MCV1	95%	95%	89%	94%	93%	88%	91%
Jordan	DTP1	99%	99%	98%	90%	78%	78%	78%
	DTP3	98%	99%	96%	89%	77%	77%	77%
	MCV1	96%	93%	92%	87%	76%	76%	76%
Kazakhstan	DTP1	93%	99%	99%	99%	94%	98%	99%
	DTP3	82%	99%	98%	97%	88%	95%	99%
	MCV1	99%	99%	99%	99%	93%	97%	99%
Kenya	DTP1	96%	93%	97%	99%	94%	99%	95%
	DTP3	89%	82%	92%	91%	89%	91%	90%
	MCV1	96%	89%	89%	89%	88%	89%	90%
Kiribati	DTP1	82%	94%	96%	97%	99%	98%	96%
	DTP3	81%	90%	95%	97%	92%	90%	91%
	MCV1	80%	81%	84%	94%	82%	80%	85%
Kyrgyz Republic	DTP1	97%	94%	98%	99%	90%	89%	90%
	DTP3	96%	92%	94%	95%	87%	89%	90%
	MCV1	97%	95%	96%	96%	92%	93%	94%
Laos	DTP1	88%	91%	91%	88%	87%	85%	87%
	DTP3	83%	84%	85%	80%	79%	75%	80%
	MCV1	81%	86%	86%	83%	79%	73%	76%
Lebanon	DTP1	96%	96%	96%	96%	87%	88%	88%
	DTP3	83%	83%	83%	83%	71%	67%	67%
	MCV1	82%	82%	82%	82%	74%	67%	67%
Lesotho	DTP1	92%	92%	92%	92%	92%	92%	92%
	DTP3	87%	87%	87%	87%	87%	87%	87%
	MCV1	90%	90%	90%	90%	90%	90%	81%
Liberia	DTP1	83%	89%	91%	86%	82%	81%	93%
	DTP3	73%	80%	80%	70%	65%	66%	78%
	MCV1	70%	75%	74%	68%	61%	58%	79%
Libya	DTP1	98%	99%	74%	74%	74%	74%	74%
	DTP3	97%	96%	73%	73%	73%	73%	73%
	MCV1	97%	94%	73%	73%	73%	73%	73%

Country	Coverage Type	2016	2017	2018	2019	2020	2021	2022
Madagascar	DTP1	74%	71%	77%	77%	78%	66%	66%
	DTP3	68%	65%	74%	70%	68%	57%	57%
	MCV1	62%	55%	68%	60%	55%	44%	44%
Malawi	DTP1	89%	93%	96%	97%	95%	95%	89%
	DTP3	84%	88%	92%	95%	94%	93%	86%
	MCV1	81%	83%	87%	92%	90%	90%	82%
Malaysia	DTP1	99%	99%	99%	99%	99%	98%	99%
	DTP3	98%	99%	99%	98%	98%	95%	97%
	MCV1	94%	96%	98%	97%	95%	96%	96%
Maldives	DTP1	99%	99%	99%	99%	99%	97%	99%
	DTP3	99%	99%	99%	98%	99%	96%	99%
	MCV1	99%	99%	99%	99%	98%	97%	98%
Mali	DTP1	82%	82%	82%	82%	75%	82%	82%
	DTP3	76%	77%	77%	77%	70%	77%	77%
	MCV1	70%	70%	70%	70%	62%	70%	70%
Mauritania	DTP1	87%	86%	86%	88%	80%	75%	84%
	DTP3	74%	76%	77%	80%	72%	68%	76%
	MCV1	73%	75%	78%	75%	70%	63%	72%
Mauritius	DTP1	97%	96%	98%	97%	94%	93%	96%
	DTP3	96%	94%	97%	96%	96%	92%	95%
	MCV1	92%	89%	99%	99%	89%	87%	98%
Mexico	DTP1	96%	93%	90%	84%	77%	83%	93%
	DTP3	93%	85%	88%	82%	72%	78%	83%
	MCV1	96%	76%	97%	73%	92%	99%	86%
Micronesia	DTP1	95%	97%	97%	97%	98%	95%	92%
	DTP3	69%	73%	75%	78%	83%	72%	69%
	MCV1	70%	76%	73%	78%	79%	64%	69%
Moldova	DTP1	94%	91%	96%	91%	86%	87%	89%
	DTP3	89%	88%	93%	91%	86%	87%	88%
	MCV1	88%	93%	93%	97%	84%	83%	84%
Mongolia	DTP1	99%	99%	99%	99%	98%	97%	97%
	DTP3	99%	99%	99%	98%	96%	95%	95%
	MCV1	98%	99%	99%	98%	97%	95%	94%
Montenegro	DTP1	97%	95%	94%	94%	94%	94%	93%
	DTP3	89%	87%	86%	85%	84%	83%	80%
	MCV1	47%	58%	42%	33%	24%	18%	33%
Morocco	DTP1	99%	99%	99%	99%	99%	99%	99%
	DTP3	99%	99%	99%	99%	99%	99%	99%
	MCV1	99%	99%	99%	99%	99%	99%	99%
Mozambique	DTP1	92%	92%	91%	91%	83%	67%	67%
	DTP3	88%	88%	88%	88%	79%	61%	61%
	MCV1	87%	87%	87%	87%	81%	84%	84%
Myanmar	DTP1	94%	94%	95%	93%	87%	45%	81%
	DTP3	90%	89%	91%	90%	84%	37%	71%
	MCV1	91%	83%	93%	84%	91%	44%	75%
Namibia	DTP1	90%	94%	94%	92%	97%	98%	90%
	DTP3	85%	88%	89%	87%	93%	94%	84%
	MCV1	75%	80%	82%	80%	90%	91%	91%
Nepal	DTP1	95%	96%	96%	96%	89%	92%	95%
	DTP3	87%	90%	91%	93%	84%	91%	90%
	MCV1	83%	90%	91%	92%	87%	90%	90%
Nicaragua	DTP1	99%	99%	99%	99%	94%	88%	94%
	DTP3	98%	98%	98%	98%	92%	87%	92%
	MCV1	99%	99%	99%	99%	97%	83%	93%
Niger	DTP1	92%	95%	91%	92%	93%	94%	96%
	DTP3	80%	85%	79%	81%	81%	82%	84%
	MCV1	76%	82%	77%	79%	79%	80%	65%
Nigeria	DTP1	62%	65%	69%	72%	70%	70%	70%
	DTP3	53%	55%	61%	66%	62%	62%	62%
	MCV1	48%	54%	56%	58%	60%	60%	60%
North Macedonia	DTP1	97%	97%	98%	98%	93%	89%	92%
	DTP3	95%	91%	92%	92%	84%	81%	84%
	MCV1	82%	83%	75%	75%	63%	70%	71%
Pakistan	DTP1	82%	83%	87%	90%	87%	90%	93%
	DTP3	75%	75%	80%	84%	80%	83%	85%
	MCV1	75%	76%	79%	81%	83%	81%	82%
Papua New Guinea	DTP1	64%	46%	44%	44%	48%	39%	45%



Country	Coverage Type	2016	2017	2018	2019	2020	2021	2022
Papua New Guinea	DTP3	46%	36%	35%	35%	39%	31%	36%
	MCV1	46%	38%	37%	37%	47%	38%	44%
Paraguay	DTP1	94%	95%	91%	88%	84%	79%	82%
	DTP3	92%	91%	88%	86%	79%	70%	69%
	MCV1	85%	92%	93%	87%	80%	68%	54%
Peru	DTP1	94%	95%	96%	97%	93%	90%	93%
	DTP3	89%	89%	88%	88%	72%	82%	82%
	MCV1	88%	87%	86%	85%	77%	78%	74%
Philippines	DTP1	87%	82%	78%	73%	74%	57%	74%
	DTP3	84%	80%	75%	71%	71%	57%	72%
	MCV1	80%	78%	77%	75%	72%	57%	69%
Russia	DTP1	97%	97%	97%	97%	97%	97%	97%
	DTP3	97%	97%	97%	97%	97%	97%	97%
	MCV1	98%	98%	98%	98%	97%	97%	97%
Rwanda	DTP1	99%	99%	98%	99%	91%	90%	99%
	DTP3	98%	98%	97%	98%	91%	88%	98%
	MCV1	95%	97%	99%	96%	94%	87%	96%
Saint Lucia	DTP1	95%	89%	99%	99%	90%	89%	92%
	DTP3	95%	80%	95%	92%	86%	80%	81%
	MCV1	99%	87%	86%	92%	89%	77%	81%
Saint Vincent	DTP1	99%	99%	97%	99%	99%	97%	97%
	DTP3	99%	99%	97%	97%	97%	92%	92%
	MCV1	99%	99%	99%	99%	99%	96%	96%
Samoa	DTP1	90%	78%	67%	97%	99%	96%	97%
	DTP3	74%	67%	44%	68%	89%	85%	76%
	MCV1	75%	67%	40%	96%	66%	62%	82%
Sao Tome	DTP1	97%	96%	97%	97%	97%	97%	97%
	DTP3	96%	95%	95%	95%	96%	97%	97%
	MCV1	93%	90%	95%	95%	86%	77%	77%
Senegal	DTP1	96%	97%	96%	97%	93%	87%	90%
	DTP3	93%	93%	92%	95%	91%	85%	88%
	MCV1	93%	90%	86%	89%	88%	87%	80%
Serbia	DTP1	97%	98%	98%	99%	97%	96%	97%
	DTP3	92%	95%	96%	97%	92%	91%	92%
	MCV1	82%	86%	92%	87%	78%	75%	81%
Sierra Leone	DTP1	97%	98%	97%	95%	93%	94%	92%
	DTP3	84%	90%	93%	95%	91%	92%	91%
	MCV1	85%	80%	87%	93%	87%	87%	90%
Solomon Islands	DTP1	99%	87%	86%	99%	98%	95%	99%
	DTP3	94%	83%	85%	94%	94%	87%	89%
	MCV1	82%	84%	93%	81%	81%	67%	90%
Somalia	DTP1	52%	52%	52%	52%	52%	52%	52%
	DTP3	42%	42%	42%	42%	42%	42%	42%
	MCV1	46%	46%	46%	46%	46%	46%	46%
South Africa	DTP1	88%	85%	84%	87%	88%	91%	87%
	DTP3	85%	84%	82%	85%	84%	86%	85%
	MCV1	84%	81%	81%	83%	84%	87%	86%
South Sudan	DTP1	51%	59%	67%	68%	71%	73%	76%
	DTP3	45%	52%	59%	61%	67%	69%	73%
	MCV1	51%	56%	61%	65%	69%	74%	72%
Sri Lanka	DTP1	99%	99%	99%	99%	96%	96%	98%
	DTP3	99%	99%	99%	99%	96%	96%	98%
	MCV1	99%	99%	99%	99%	96%	97%	99%
Sudan	DTP1	97%	98%	97%	97%	96%	94%	94%
	DTP3	93%	95%	93%	93%	90%	84%	84%
	MCV1	86%	90%	88%	90%	86%	81%	81%
Suriname	DTP1	80%	78%	83%	81%	60%	81%	83%
	DTP3	77%	67%	81%	77%	51%	72%	77%
	MCV1	76%	76%	77%	64%	45%	58%	74%
Syria	DTP1	61%	63%	67%	72%	65%	65%	64%
	DTP3	42%	48%	47%	54%	49%	48%	46%
	MCV1	62%	67%	63%	65%	59%	59%	41%
Tajikistan	DTP1	98%	98%	98%	98%	98%	97%	98%
	DTP3	96%	96%	96%	97%	97%	97%	97%
	MCV1	97%	98%	98%	98%	98%	97%	98%
Tanzania	DTP1	95%	93%	91%	91%	88%	83%	91%
	DTP3	92%	90%	89%	89%	86%	81%	88%

Country	Coverage Type	2016	2017	2018	2019	2020	2021	2022
Tanzania	MCV1	83%	90%	88%	88%	84%	77%	86%
Thailand	DTP1	99%	99%	99%	99%	99%	99%	99%
	DTP3	99%	99%	97%	97%	97%	97%	97%
	MCV1	99%	99%	96%	96%	96%	96%	96%
Timor-Leste	DTP1	86%	92%	92%	90%	87%	87%	87%
	DTP3	79%	83%	83%	90%	86%	86%	86%
	MCV1	73%	77%	77%	85%	79%	79%	79%
Togo	DTP1	89%	88%	88%	90%	87%	88%	88%
	DTP3	82%	83%	81%	84%	82%	83%	82%
	MCV1	73%	77%	71%	75%	69%	70%	71%
Tonga	DTP1	97%	99%	99%	99%	99%	99%	99%
	DTP3	96%	99%	99%	99%	99%	99%	99%
	MCV1	98%	99%	99%	99%	99%	99%	99%
Tunisia	DTP1	99%	99%	98%	98%	99%	99%	99%
	DTP3	98%	98%	97%	98%	97%	97%	97%
	MCV1	96%	98%	96%	98%	98%	95%	95%
Turkiye	DTP1	99%	98%	99%	99%	99%	95%	99%
	DTP3	98%	96%	98%	99%	98%	95%	99%
	MCV1	98%	96%	96%	97%	95%	96%	95%
Turkmenistan	DTP1	99%	99%	99%	99%	99%	99%	99%
	DTP3	98%	99%	99%	99%	98%	97%	98%
	MCV1	99%	99%	99%	99%	98%	97%	98%
Uganda	DTP1	99%	99%	97%	96%	94%	97%	94%
	DTP3	93%	94%	93%	93%	89%	91%	89%
	MCV1	79%	83%	86%	87%	89%	90%	90%
Ukraine	DTP1	42%	65%	87%	89%	93%	91%	78%
	DTP3	19%	50%	69%	80%	81%	78%	73%
	MCV1	42%	86%	91%	93%	85%	88%	74%
Uzbekistan	DTP1	99%	99%	99%	96%	96%	99%	99%
	DTP3	99%	99%	98%	96%	95%	98%	99%
	MCV1	99%	99%	96%	98%	99%	99%	99%
Vanuatu	DTP1	94%	92%	94%	96%	84%	71%	83%
	DTP3	81%	85%	85%	90%	78%	62%	68%
	MCV1	84%	80%	75%	80%	78%	50%	70%
Venezuela	DTP1	97%	95%	84%	85%	73%	73%	73%
	DTP3	84%	66%	60%	64%	54%	56%	56%
	MCV1	88%	96%	74%	93%	76%	68%	68%
Viet Nam	DTP1	96%	98%	78%	96%	96%	87%	92%
	DTP3	96%	94%	75%	89%	94%	83%	91%
	MCV1	99%	97%	97%	95%	97%	89%	88%
Yemen	DTP1	76%	76%	75%	81%	83%	82%	85%
	DTP3	71%	68%	65%	73%	72%	72%	74%
	MCV1	70%	65%	64%	67%	68%	71%	73%
Zambia	DTP1	96%	95%	94%	94%	88%	94%	86%
	DTP3	95%	94%	90%	88%	84%	91%	82%
	MCV1	97%	96%	94%	93%	96%	90%	90%
Zimbabwe	DTP1	94%	94%	94%	94%	93%	93%	93%
	DTP3	90%	89%	89%	90%	86%	88%	90%
	MCV1	95%	90%	88%	85%	85%	88%	90%

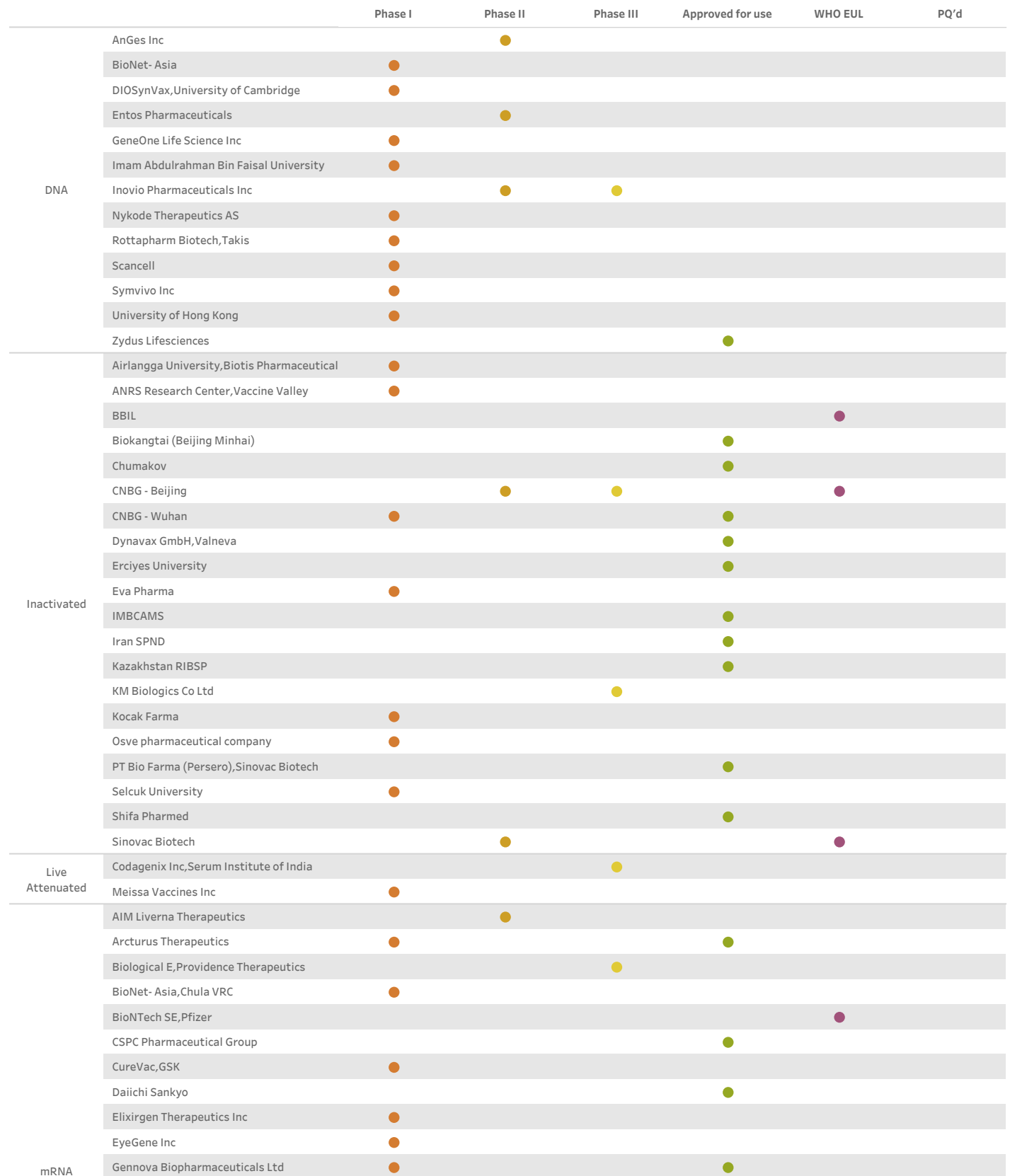
COVID-19 Vaccine Pipeline

FIGURE 8.5

This exhibit shows the status of COVID-19 vaccines from clinical development through to WHO prequalification as of January 2024.

Source: GVMM, January 2024

Development Phase



		Phase I	Phase II	Phase III	Approved for use	WHO EUL	PQ'd
mRNA	Gritstone Oncology	●					
	GSK	●					
	HDT Bio Corp		●				
	ImmunityBio Inc	●					
	Jiangsu Recbio Technology	●					
	Moderna					●	
	Providence Therapeutics			●			
	RNACure Biopharma, Walvax		●				
	RVAC Medicines	●					
	Senai Simatec		●				
	Stemirna Therapeutics, Tongji University	●					
	Suzhou Abogen	●					
	Suzhou Abogen, Walvax				●		
	Tianjin CanSino		●				
	University of Melbourne	●					
VLP Biotech	●						
Protein Subunit	ACM Biolabs	●					
	Adimmune		●				
	Airlangga University, Biotis Pharmaceutical				●		
	Akston Biosciences		●				
	Anhui Longcom				●		
	ARVAC CG, Laboratorio Pablo Cassará				●		
	Baiya Phytopharm		●				
	Baqiyatallah University				●		
	Betuvax	●					
	Bio-Manguinhos/Fiocruz	●					
	Biological E					●	
	Center for Genetic Engineering and Biotech..	●			●		
	CinnaGen, Vaxine Pty Ltd				●		
	Clover Biopharmaceuticals		●				
	Clover Biopharmaceuticals, Dynavax				●		
	Emergex Vaccines Ltd	●					
	EnGeneIC	●					
	EuBiologics Co., Ltd.			●			
	Finlay Institute	●			●		
	GSK, Sanofi				●		
	HIPRA						●
	HK inno.N Corp	●					
	Jiangsu Recbio Technology				●		
	Kazakhstan RIBSP	●					
	Kentucky BioProcessing	●					
	Livzon Pharmaceutical				●		
	Medigen	●			●		
Nanogen			●				
PDS Biotechnology Corp	●						
PT Bio Farma (Persero)				●			

		Phase I	Phase II	Phase III	Approved for use	WHO EUL	PQ'd	
Protein Subunit	Razi Vaccine & Serum				●			
	Reliance Life Sciences	●						
	Shionogi & Co			●				
	Sinocelltech				●			
	SK Bioscience Co., Ltd.	●				●		
	SPbNIIVS				●			
	Speransa Therapeutics	●						
	University Hospital Tuebingen	●						
	University of Melbourne	●						
	University of Saskatchewan,VIDO-InterVac		●					
	VaxForm LLC	●						
	VaxSyna Inc	●						
	Vaxxinity			●				
	Vector Institute				●			
	Walter Reed Army Institute	●						
	Walvax	●	●					
	WestVac Biopharma				●			
	Yisheng Biopharma		●					
	Viral Vector	Academy of Military Medical Sciences	●					
		Aivita Biomedical		●				
Aspen Pharmicare Holdings Ltd					●			
AstraZeneca,University of Oxford						●		
AstraZeneca,University of Oxford,SII						●		
Avimex		●						
BBIL,FluGen Inc		●						
BBIL,Precision Virologics					●			
Bio-Manguinhos/Fiocruz					●			
BIOCAD		●						
Cellid Co,LG Life Sciences		●						
City of Hope			●					
CyanVac LLC		●						
Gamaleya					●			
German Center for Infection Research		●						
GPO-MBP Co., Ltd.,Mahidol University		●						
ImmunityBio Inc,NantKwest			●					
Instituto Butantan			●					
Janssen Vaccines Corp.						●		
LEUKOCARE,ReiThera Srl,Univercells			●					
McMaster University		●						
Moat Biotechnology Corporation		●						
Mount Sinai		●						
Shenzhen GenoImmune Medical Institute		●						
Tetherex Pharmaceuticals		●						
Tianjin CanSino					●	●		
Vaxart Inc		●						
Vietnam IVAC		●						

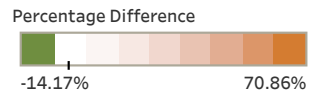
		Phase I	Phase II	Phase III	Approved for use	WHO EUL	PQ'd
Viral Vector	Walvax		●				
	Wantai BioPharm				●		
Virus-Like Particle	Bilikent University		●				
	Novavax, Serum Institute of India					●	
	Oravax	●					
	Serum Institute of India, SpyBiotech	●					
	VBI Vaccines Inc	●					
	Yantai Patronus Biotech		●				

CDC Pricing FIGURE 8.6

This exhibit shows public prices (in USD) agreed on by U.S. CDC from 2015 to 2024 with individual suppliers for different vaccine presentations.

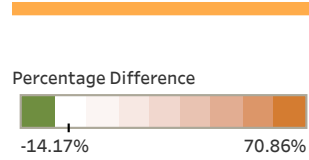
Cells are color-coded to indicate a percentage increase (orange) or decrease (green) compared to the previous year's price.

Source: CDC website,
January 2024



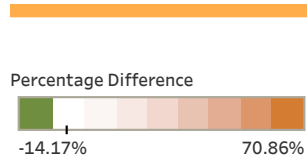
Vaccine Name	Demographic	Company Name	Brand Name	Vial Size	Presentation	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
Covid-19	Pediatric	Moderna	Spikevax	1-dose	Vial									\$85.91	\$85.91	
		Pfizer	Comirnaty	3-dose	Vial									\$48.88	\$48.88	
Covid-19 (adult)	Adult	Moderna	Spikevax	1-dose	Vial									\$81.61	\$81.61	
		Novavax	Nuvaxovid	5-dose	Vial									\$58.00	\$58.00	
		Pfizer	Comirnaty	1-dose	Syringe									\$85.10	\$85.10	
Covid-19 (mid. child.)	Pediatric	Pfizer	Comirnaty	1-dose	Vial								\$65.45	\$65.45		
Dengue	Pediatric	Sanofi	Dengvaxia	1-dose	Vial								\$94.05	\$95.50	\$95.93	
DTaP	Pediatric	GSK	Infanrix	1-dose	Syringe	\$16.02	\$16.73	\$17.34	\$18.06	\$18.55	\$19.00	\$19.54	\$20.21	\$20.93	\$21.09	
					Vial	\$16.02	\$16.73	\$17.34	\$18.06	\$18.55	\$18.67					
		Sanofi	Daptacel	1-dose	Vial	\$15.82	\$16.61	\$16.97	\$17.49	\$17.96	\$18.39	\$18.91	\$19.68	\$20.56	\$20.76	
DTaP-HepB-IPV	Pediatric	GSK	Pediarix	1-dose	Syringe	\$53.86	\$54.73	\$55.75	\$57.55	\$58.78	\$60.16	\$61.70	\$62.49	\$63.85	\$64.25	
DTaP-Hib-IPV	Pediatric	Sanofi	Pentaxim	1-dose	Vial	\$53.73	\$56.49	\$56.81	\$57.90	\$59.15	\$60.91	\$62.61	\$65.05	\$67.68	\$68.25	
DTaP-IPV	Pediatric	GSK	Kinrix	1-dose	Syringe	\$38.50	\$39.39	\$39.57	\$40.10	\$41.03	\$42.08	\$43.12	\$44.78	\$46.57	\$46.96	
					Vial	\$38.50	\$39.39	\$39.57	\$40.09	\$41.31	\$42.08	\$42.46				
		Sanofi	Quadracel	1-dose	Syringe									\$44.32	\$45.75	\$46.18
					Vial			\$39.57	\$39.57	\$40.39	\$41.42	\$42.66	\$44.03	\$45.71	\$46.18	
Hexa	Pediatric	Merck	Vaxelis	1-dose	Syringe							\$91.59	\$94.03	\$97.16	\$97.79	
					Vial							\$91.59	\$94.03	\$97.16	\$97.79	
HepA	Pediatric	GSK	Havrix 720	1-dose	Syringe	\$16.72	\$17.69	\$18.30	\$19.33	\$20.28	\$20.92	\$21.45	\$22.16	\$22.85	\$23.00	
					Vial	\$16.72	\$17.69	\$18.30	\$19.28							
		Merck	VAQTA	1-dose	Syringe	\$16.99	\$18.09	\$18.23	\$19.29	\$19.57	\$20.29	\$21.05	\$22.27	\$23.15	\$23.30	
					Vial	\$16.99	\$18.09	\$18.52	\$19.14	\$19.29				\$22.64		
HepA (adult)	Adult	GSK	Havrix	1-dose	Syringe	\$26.60	\$27.68	\$27.68	\$27.95	\$29.52	\$32.08	\$34.54	\$37.51	\$38.57	\$38.57	
					Vial	\$25.73	\$25.73	\$25.73	\$25.73							
		Merck	VAQTA	1-dose	Syringe	\$25.73	\$26.81	\$28.85	\$29.86	\$30.40	\$31.46	\$34.37	\$37.13	\$39.50	\$40.33	
					Vial	\$25.73	\$25.73	\$26.90	\$27.89	\$29.40	\$31.46	\$32.86				
HepAB	Adult	GSK	Twinrix	1-dose	Syringe	\$52.90	\$54.48	\$55.07	\$56.29	\$59.31	\$61.92	\$62.88	\$65.75	\$72.87	\$75.96	
					Vial	\$52.35	\$53.88									
	Pediatric	GSK	Twinrix	1-dose	Syringe	\$53.27	\$55.03	\$56.25	\$58.18	\$59.91	\$62.30	\$64.31	\$66.92	\$69.72	\$70.33	
HepB	Pediatric	GSK	Engerix-B	1-dose	Syringe	\$11.08	\$11.51	\$11.99	\$13.56	\$15.52	\$15.82	\$15.54	\$16.09	\$16.75	\$16.89	
					Vial	\$11.08	\$11.51	\$11.60								
		Merck	RECOMBIVAX HB	1-dose	Syringe	\$11.75	\$12.21	\$12.30	\$12.30	\$12.30	\$12.30	\$12.30	\$13.55	\$13.84	\$13.93	
					Vial	\$11.50	\$12.21	\$12.30	\$12.30	\$12.30	\$12.45	\$12.79	\$13.38	\$13.84	\$13.93	

Vaccine Name	Demographic	Company Name	Brand Name	Vial Size	Presentation	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
HepB (adult)	Adult	Dynavax	HepLisav-B	1-dose	Syringe				\$69.75	\$69.75	\$70.85	\$73.89	\$74.94	\$74.94	\$74.94
		GSK	Engerix-B	1-dose	Syringe	\$27.73	\$28.19	\$28.83	\$30.03	\$32.16	\$32.15	\$29.45	\$35.02	\$36.22	\$36.22
						Vial	\$24.29	\$24.81	\$25.58	\$26.65	\$28.54	\$29.63	\$29.45	\$33.49	\$33.49
		Merck	RECOMBIVAX HB	1-dose	Syringe		\$24.16	\$26.34	\$27.73					\$32.94	\$32.43
						Vial	\$25.75	\$23.78	\$23.78		\$25.43	\$25.43			
VBI	PreHevbrio	1-dose	Vial											\$33.80	
Hib	Pediatric	GSK	Hiberix	1-dose	Vial		\$9.46	\$9.46	\$9.60	\$9.51	\$9.46	\$9.55	\$9.96	\$10.61	\$10.76
		Merck	PedvaxHIB	1-dose	Vial	\$12.34	\$12.46	\$12.65	\$13.01	\$13.18	\$13.41	\$13.67	\$14.51	\$15.47	\$15.66
		Sanofi	Act-HIB	1-dose	Vial	\$9.42	\$9.54	\$9.55	\$9.32	\$9.42	\$9.66	\$9.90	\$10.28	\$10.69	\$10.78
HPV2	Adult	GSK	Cervarix	1-dose	Syringe	\$86.24	\$85.79								
	Pediatric	GSK	Cervarix	1-dose	Syringe	\$106.60	\$107.97								
HPV4	Adult	Merck	Gardasil	1-dose	Vial	\$91.93	\$92.84								
	Pediatric	Merck	Gardasil	1-dose	Vial	\$118.53	\$113.54								
HPV9	Adult	Merck	Gardasil9	1-dose	Syringe				\$144.18	\$144.58	\$140.59	\$149.11	\$161.95	\$173.03	\$178.33
						Vial	\$121.64	\$119.04	\$116.22	\$119.21					
	Pediatric	Merck	Gardasil9	1-dose	Syringe					\$168.10	\$174.38	\$184.05	\$192.18	\$204.53	\$220.80
						Vial	\$134.26	\$138.10	\$137.72	\$160.61					
IPV	Pediatric	Sanofi	IMOVAX POLIO	10-dose	Vial		\$12.54	\$12.70	\$12.90	\$13.23	\$13.49	\$13.75	\$13.97	\$14.80	\$15.78
MenACWY	Adult	GSK	Menveo	1-dose	Vial	\$71.65	\$72.09	\$69.74	\$65.91	\$66.76	\$68.45	\$70.50	\$73.36	\$78.06	\$79.37
		Novartis	Menveo	1-dose	Vial	\$71.65									
		Sanofi	Menactra	1-dose	Vial	\$75.45	\$74.33	\$74.94	\$77.13	\$75.07	\$75.14	\$77.70	\$80.73		
			MenQuadfi	1-dose	Vial								\$80.24	\$79.70	\$79.37
	Pediatric	GSK	Menveo	1-dose	Two vial set									\$105.60	\$105.60
					Vial	\$84.06	\$77.43	\$73.04	\$79.89	\$82.53	\$89.19	\$97.89	\$101.66	\$104.90	\$105.60
		Novartis	Menveo	1-dose	Vial	\$83.10									
		Sanofi	Menactra	1-dose	Vial	\$84.14	\$88.46	\$85.61	\$91.09	\$93.04	\$95.30	\$98.35	\$102.38		
MenQuadfi	1-dose		Vial							\$100.05	\$103.32	\$107.12	\$107.84		
MenB	Adult	GSK	GSK3536829A	1-dose	Syringe	\$122.35	\$117.01	\$106.18	\$104.22	\$103.40	\$104.92	\$108.89	\$114.57	\$123.72	\$127.06
		Novartis	Bexsero	1-dose	Syringe	\$122.35									
		Pfizer	Trumenba	1-dose	Syringe	\$85.33	\$85.55	\$82.22	\$75.81	\$80.46	\$87.78	\$94.18	\$98.82	\$106.13	\$108.18
	Pediatric	GSK	GSK3536829A	1-dose	Syringe	\$122.95	\$112.09	\$104.50	\$111.40	\$114.56	\$116.34	\$124.89	\$133.08	\$140.16	\$141.71
		Novartis	Bexsero	1-dose	Syringe	\$122.95									
		Pfizer	Trumenba	1-dose	Syringe	\$95.75	\$95.75	\$94.55	\$103.75	\$107.91	\$112.56	\$117.45	\$124.02	\$129.62	\$130.77
MenC-Hib	Pediatric	GSK	Menitorix	1-dose	Vial	\$10.10	\$10.45	\$10.53							



Vaccine Name	Demographic	Company Name	Brand Name	Vial Size	Presentation	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
MMR	Adult	GSK	Priorix	1-dose	Vial								\$55.89	\$59.16	\$61.20	
		Merck	M-M-R II	1-dose	Vial	\$38.79	\$40.00	\$40.71	\$43.72	\$47.59	\$48.86	\$51.11	\$54.82	\$59.16	\$61.20	
	Pediatric	GSK	Priorix	1-dose	Vial								\$23.67	\$24.67	\$24.97	
		Merck	M-M-R II	1-dose	Vial	\$19.90	\$20.08	\$20.38	\$20.92	\$21.18	\$21.55	\$21.93	\$23.20	\$24.66	\$24.95	
MMRV	Pediatric	Merck	ProQuad	1-dose	Vial	\$107.06	\$113.38	\$116.73	\$123.37	\$129.83	\$135.48	\$141.47	\$150.84	\$162.42	\$165.09	
PCV13	Adult	Pfizer	Prevnar 13	1-dose	Syringe	\$94.57	\$96.37	\$101.95	\$115.15	\$121.56	\$127.25	\$134.10	\$137.22			
	Pediatric	Pfizer	Prevnar 13	1-dose	Syringe	\$115.79	\$119.81	\$124.05	\$130.46	\$135.70	\$141.55	\$147.71	\$155.98	\$158.18		
PCV15	Adult	Merck	VAXNEUVANCE	1-dose	Syringe								\$149.90	\$151.28	\$152.14	
	Pediatric	Merck	VAXNEUVANCE	1-dose	Syringe								\$162.27	\$162.27	\$162.27	
PCV20	Adult	Pfizer	Prevnar 20	1-dose	Syringe								\$173.14	\$175.36	\$176.84	
	Pediatric	Pfizer	Prevnar 20	1-dose	Syringe									\$178.00	\$178.00	
PPSV23	Adult	Merck	PNEUMOVAX 23	1-dose	Syringe	\$27.27	\$26.15	\$33.61	\$51.22	\$60.74	\$62.69	\$67.94	\$75.02	\$79.53	\$81.97	
					Vial	\$26.59	\$26.15	\$33.37	\$51.13	\$56.14						
	Pediatric	Merck	PNEUMOVAX 23	1-dose	Syringe			\$33.61		\$56.30	\$58.18	\$60.76	\$64.68	\$65.80	\$65.80	
					Vial	\$43.15	\$46.00	\$44.11	\$51.91	\$53.11						
Rota	Pediatric	GSK	Rotarix	1-dose	Plastic Tube	\$85.04	\$86.46	\$89.14	\$92.36	\$94.23	\$96.57	\$98.58	\$101.52	\$104.58	\$105.45	
		Merck	RotaTeq	1-dose	Plastic Tube	\$63.96	\$66.07	\$67.95	\$70.12	\$70.49	\$71.42	\$73.46	\$76.28	\$78.43	\$79.24	
RSV	Adult	GSK	Arexvy	1-dose	Vial									\$198.40	\$198.40	
		Pfizer	Abrysvo	1-dose	Vial									\$219.72	\$219.72	
	Pediatric	Pfizer	Abrysvo	1-dose	Vial									\$227.15	\$227.15	
		Sanofi	Beyfortus	1-dose	Syringe									\$395.00		
		Sanofi	Beyfortus (mAb)	1-dose	Syringe								\$395.00	\$395.00		
Seasonal Influenza - QIV	Adult	GSK	Flulaval Quad.	1-dose	Syringe				\$12.22	\$12.22	\$12.40	\$12.84	\$13.34	\$13.84	\$13.92	
				10-dose	Vial	\$11.37	\$11.72	\$11.88	\$11.94	\$11.94	\$11.94					
	Pediatric	AstraZeneca	FluMist Quad.	1-dose	Sprayer				\$18.88	\$18.88	\$18.88	\$18.88	\$18.88	\$18.88	\$19.41	\$19.51
		GSK	Fluarix Quad.	1-dose	Syringe	\$13.95	\$14.39	\$14.43	\$13.67	\$13.50	\$13.69	\$14.08	\$14.59	\$15.13	\$15.22	
			Flulaval Quad.	1-dose	Syringe		\$14.43	\$14.43	\$13.67	\$13.50	\$13.69	\$14.08	\$14.59	\$15.13	\$15.22	
					10-dose	Vial	\$13.07	\$13.51	\$13.55	\$13.55	\$13.55	\$13.55				
		MedImmune	FluMist Quad.	1-dose	Sprayer	\$18.70	\$18.88									
		Novartis	Flucelvax Quad.	1-dose	Syringe		\$14.34	\$14.34								
		Sanofi	Fluzone Quad.	1-dose	Syringe	\$15.93	\$16.93	\$16.13	\$15.21	\$13.93	\$13.59	\$13.67	\$14.16	\$14.59	\$14.65	
					Vial	\$15.10	\$15.74	\$15.72	\$15.21	\$13.93	\$13.56	\$13.67	\$14.16	\$14.25		
			10-dose	Vial	\$13.15	\$13.70	\$14.27	\$14.22	\$13.85	\$13.61	\$13.69	\$14.16	\$14.59	\$14.65		
Seqirus	Afluria Quad.	1-dose	Syringe				\$14.43	\$13.61	\$13.32	\$13.63	\$15.01	\$15.72	\$15.81			

Vaccine Name	Demographic	Company Name	Brand Name	Vial Size	Presentation	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
Seasonal Influenza - QIV	Pediatric	Seqirus	Afluria Quad.	10-dose	Vial				\$13.55	\$13.07	\$12.57	\$12.45	\$14.61	\$15.46	\$15.61	
			Flucelvax Quad.	1-dose	Syringe			\$15.42	\$14.61	\$15.41	\$15.92	\$17.25	\$19.55	\$20.89	\$21.07	
				10-dose	Vial			\$14.07	\$13.64	\$14.82	\$15.12	\$16.30	\$18.45	\$19.72	\$19.88	
Seasonal Influenza - TIV	Pediatric	GSK	FluLaval	10-dose	Vial	\$6.75										
		Sanofi	Fluzone	1-dose	Syringe	\$9.60										
				10-dose	Vial	\$7.75	\$7.75									
		Seqirus	Afluria	1-dose	Syringe	\$7.79	\$7.97	\$7.99								
10-dose	Vial			\$7.04	\$7.22	\$7.24										
Seasonal Influenza (adult) - QIV	Adult	AstraZeneca	FluMist Quad.	1-dose	Sprayer						\$17.94	\$16.45	\$16.45	\$16.92	\$17.00	
		GSK	Fluarix Quad.	1-dose	Syringe	\$12.12	\$12.66	\$12.72	\$12.31	\$12.22	\$12.40	\$12.84	\$13.34	\$13.84	\$13.92	
		Sanofi	Fluzone Quad.	1-dose	Syringe	\$12.97	\$13.51	\$13.58	\$13.57	\$13.80	\$13.73	\$14.05	\$14.55	\$14.86	\$14.91	
					Vial	\$13.58	\$13.92	\$13.70	\$13.57	\$13.80	\$13.73	\$14.05	\$14.55	\$14.63		
				10-dose	Vial	\$12.22	\$12.53	\$12.57	\$12.57	\$12.78	\$12.81	\$13.13	\$13.60	\$13.89	\$13.93	
		Seqirus	Afluria Quad.	1-dose	Syringe			\$12.68	\$12.23	\$12.13	\$12.40	\$13.17	\$14.11	\$15.07	\$15.22	
					10-dose	Vial			\$11.95	\$11.46	\$11.35	\$11.60	\$12.54	\$13.47	\$14.37	\$14.51
				Flucelvax Quad.	1-dose	Syringe			\$13.80	\$12.43	\$15.12	\$15.46	\$15.92	\$17.73	\$18.88	\$19.03
				10-dose	Vial			\$12.55	\$11.57	\$14.54	\$14.55	\$15.31	\$17.28	\$18.39	\$18.53	
Seasonal Influenza (adult) - TIV	Adult	GSK	FluLaval	10-dose	Vial	\$5.88										
		Sanofi	Fluzone	1-dose	Syringe	\$8.75										
				10-dose	Vial		\$7.75									
		Seqirus	Afluria	1-dose	Syringe	\$7.38	\$7.99	\$9.24	\$9.99							
					10-dose	Vial	\$6.62	\$7.24	\$8.87	\$9.50						
				Fluvirin	1-dose	Syringe			\$9.99	\$9.99						
		10-dose	Vial			\$9.50	\$9.50									
Shingles	Adult	GSK	Shingrix	1-dose	Vial				\$102.19	\$102.40	\$102.09	\$100.56	\$103.03	\$112.64	\$120.92	
		Merck	ZOSTAVAX	1-dose	Vial	\$116.83	\$117.12	\$133.42	\$134.16							
Td	Adult	Grifols	Tdvax	1-dose	Vial		\$13.20	\$12.87	\$13.75	\$15.00	\$16.11	\$16.36	\$16.84	\$17.98	\$18.42	
		Sanofi	IMOVAX	1-dose	Syringe									\$23.72	\$23.72	
					Vial									\$21.95	\$21.95	
			Tenivac	1-dose	Syringe	\$14.41	\$12.46	\$12.46				\$21.67	\$22.87			
			Vial	\$14.30	\$12.27	\$12.27					\$21.55	\$21.78				
	Pediatric	Grifols	Tdvax	1-dose	Vial		\$13.20	\$12.83	\$12.52	\$15.15	\$16.24	\$16.46	\$17.11	\$18.24	\$18.51	
		Sanofi	IMOVAX	1-dose	Syringe									\$23.42	\$23.42	
					Vial								\$23.42	\$23.42		



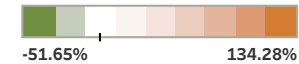
Vaccine Name	Demographic	Company Name	Brand Name	Vial Size	Presentation	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Td	Pediatric	Sanofi	Tenivac	1-dose	Syringe	\$18.44	\$19.55	\$19.69	\$19.95	\$20.47	\$20.99	\$21.51	\$22.34	\$23.21	
					Vial	\$18.44	\$19.55	\$19.69	\$19.95	\$20.47	\$20.99	\$21.51	\$22.34	\$23.21	
Tdap	Adult	GSK	Boostrix	1-dose	Syringe	\$23.86	\$22.86	\$24.84	\$24.79	\$24.94	\$25.13	\$25.61	\$26.84	\$28.20	\$28.54
					Vial	\$25.03	\$23.97	\$24.36	\$24.49	\$24.57	\$24.80	\$25.44	\$26.25	\$27.76	\$28.10
		Sanofi	Adacel	1-dose	Syringe	\$20.18	\$23.25	\$24.48	\$24.81	\$25.10	\$24.89	\$25.82	\$27.55	\$28.99	\$29.47
					Vial	\$22.99	\$23.60	\$24.07	\$24.89	\$24.49	\$25.02	\$26.34	\$27.23	\$28.01	\$28.07
	Pediatric	GSK	Boostrix	1-dose	Syringe	\$29.82	\$31.45	\$31.43	\$31.42	\$32.02	\$32.84	\$33.66	\$34.74	\$35.78	\$36.01
					Vial	\$30.18	\$31.45	\$31.43	\$31.42	\$32.02	\$32.84	\$33.66	\$34.74	\$35.78	\$36.01
		Sanofi	Adacel	1-dose	Syringe	\$31.00	\$31.37	\$31.16	\$30.92	\$31.54	\$32.34	\$32.93	\$34.03	\$35.39	\$35.68
					Vial	\$31.00	\$31.37	\$31.16	\$30.92	\$31.54	\$32.34	\$32.93	\$34.03	\$35.39	\$35.68
Varicella	Adult	Merck	VARIVAX	1-dose	Vial	\$64.07	\$67.58	\$67.55	\$72.99	\$81.22	\$82.04	\$87.53	\$95.41	\$102.63	\$106.36
	Pediatric	Merck	VARIVAX	1-dose	Vial	\$81.96	\$86.36	\$84.97	\$95.14	\$102.63	\$107.54	\$112.88	\$120.60	\$130.17	\$132.42

PAHO Pricing FIGURE 8.7

This exhibit shows average price (in USD) per dose paid by PAHO's Revolving Fund 2014–2023 to suppliers for different vaccine presentations. Cells are color-coded to indicate a percentage increase (orange) or decrease (green) compared to PAHO price from the previous year.

Source: PAHO website, June 2023

% Difference in Avg. Price



Vaccine	Vial Size	Country of Origin	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BCG	10-dose	Unspecified				\$0.14	\$0.21	\$0.22	\$0.23	\$0.33		
		Bulgaria	\$0.14	\$0.16								
		Denmark										\$0.58
	20-dose	India	\$0.12	\$0.14								\$0.33
		Denmark										\$0.29
DT	10-dose	Unspecified	\$0.11	\$0.12	\$0.16	\$0.17	\$0.17	\$0.16	\$0.16	\$0.17	\$0.17	\$0.17
DTaP	1-dose	Unspecified	\$8.49	\$11.26	\$12.80	\$15.00	\$15.00	\$15.00	\$16.20	\$16.52	\$16.85	\$18.20
Hexa	1-dose	Unspecified			\$19.00	\$19.80	\$20.60	\$21.12	\$21.12	\$21.12	\$21.33	\$20.77
DTaP-Hib-IPV	1-dose	Unspecified	\$11.50	\$12.50	\$13.00	\$13.60	\$14.20	\$14.80	\$15.84	\$16.31	\$16.31	\$17.61
DTaP-IPV	1-dose	Unspecified		\$9.55	\$10.40	\$11.00	\$11.50	\$12.00	\$12.84	\$13.23	\$13.23	\$13.49
DTwP	10-dose	Unspecified				\$0.20	\$0.17	\$0.18	\$0.18	\$0.18	\$0.17	\$0.18
		India		\$0.24								
		Indonesia		\$0.20								
Penta	1-dose	Unspecified	\$2.64	\$2.27	\$2.10	\$1.96	\$1.08	\$1.09	\$1.01	\$1.03	\$1.12	\$1.19
	10-dose	Unspecified	\$1.95	\$2.00								
DTwP-Hib	1-dose	Unspecified	\$2.65	\$2.65	\$2.65	\$2.65	\$2.65	\$2.65	\$3.00	\$3.00	\$3.05	\$3.10
HepA	1-dose	Unspecified	\$9.30	\$11.50	\$10.20	\$10.63	\$10.66	\$10.71	\$10.90	\$10.69	\$10.17	\$8.03
HepB	1-dose	Unspecified	\$0.48			\$0.27	\$0.27	\$0.27	\$0.64	\$0.64	\$0.69	\$0.67
		India		\$0.25								
		North Korea		\$0.38								
10-dose	Unspecified	\$0.18	\$0.25	\$0.25	\$0.18	\$0.18	\$0.24	\$0.27	\$0.30	\$0.30	\$0.33	
Hib	1-dose	Unspecified	\$1.70	\$1.95	\$2.05	\$2.05	\$2.05	\$2.05	\$2.15	\$2.15	\$2.15	\$2.25
HPV	1-dose	Unspecified			\$8.50	\$9.15	\$9.04					\$10.48
IPV	1-dose	Unspecified			\$2.80	\$5.30	\$5.30	\$5.50				
		India	\$2.80									
5-dose	Unspecified			\$1.90	\$1.90	\$2.00	\$3.10	\$3.10	\$3.10	\$2.50		
MenACWY	1-dose	Unspecified			\$20.30	\$20.30	\$20.30	\$20.30	\$20.30	\$20.30	\$20.30	\$20.30
MMR	1-dose	Unspecified	\$3.55	\$4.05	\$4.19	\$4.33	\$4.17	\$4.17	\$4.17	\$4.22	\$4.33	\$4.48
	5-dose	Unspecified	\$0.99			\$1.30	\$1.43	\$1.43	\$1.43	\$1.45	\$1.62	\$1.78
	10-dose	Unspecified	\$1.02									\$1.71
MR	1-dose	Unspecified	\$1.80	\$1.85	\$2.25	\$2.25	\$2.25	\$2.48	\$2.48	\$2.48	\$2.72	\$3.00
	10-dose	Unspecified	\$0.55	\$0.58	\$0.61	\$0.61	\$0.62	\$0.66	\$0.66			\$0.81
OCV	1-dose	Unspecified		\$1.85	\$1.85	\$1.85	\$1.85	\$1.70	\$1.70	\$1.70		
bOPV	10-dose	Unspecified				\$0.16	\$0.17	\$0.17	\$0.17	\$0.14	\$0.17	\$0.20

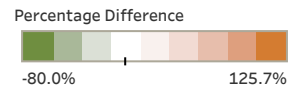
Vaccine	Vial Size	Country of Origin	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
bOPV	20-dose	Unspecified				\$0.13	\$0.13	\$0.13	\$0.13	\$0.13	\$0.13	\$0.13	
PCV	1-dose	Unspecified			\$14.50	\$13.68	\$13.68	\$13.68	\$13.68	\$14.50	\$13.68	\$13.50	
PPSV	1-dose	Unspecified	\$7.26			\$6.81	\$7.98	\$8.30	\$8.63	\$8.63	\$9.49	\$9.44	
	5-dose	Unspecified	\$6.60										
Rabies	1-dose	Unspecified			\$11.65	\$12.20	\$12.80	\$13.00	\$9.93	\$10.44	\$10.20	\$9.39	
Rota	1-dose	Unspecified	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50			\$3.73	
Seasonal Influenza	1-dose	Unspecified				\$5.65	\$6.00						
		Argentina									\$3.80	\$3.70	
		France						\$5.25	\$3.20	\$5.25	\$5.25	\$5.42	
		North Korea	\$3.30					\$4.35	\$4.22				
		South Korea									\$4.44	\$4.38	
	10-dose	Australia										\$2.75	\$2.83
		Brazil											\$2.75
		France	\$3.42	\$3.95	\$3.95	\$3.40	\$2.65	\$3.79	\$3.89	\$3.86	\$3.85	\$4.50	
		North Korea		\$3.00	\$2.75	\$2.55	\$2.15	\$3.01	\$3.40				
		South Korea									\$3.34	\$4.02	
	20-dose	Australia									\$1.38	\$1.42	
		Brazil											\$1.58
France		\$1.90	\$1.98	\$1.98	\$1.76	\$1.32	\$1.32	\$1.32	\$1.61	\$1.64			
North Korea		\$1.42	\$1.50	\$1.38	\$1.27	\$1.07	\$1.09	\$1.20					
South Korea										\$1.35	\$1.49		
Td	10-dose	Unspecified	\$0.10			\$0.11	\$0.09	\$0.10	\$0.10	\$0.10	\$0.11	\$0.12	
Tdap	1-dose	Unspecified				\$11.39	\$11.47	\$12.72	\$12.94	\$12.77	\$11.04	\$11.22	
tOPV	20-dose	Unspecified	\$0.13	\$0.14									
Typhoid Ps	20-dose	Unspecified		\$8.90	\$8.90	\$9.00	\$9.00	\$10.00	\$10.00	\$10.00			
Varicella	1-dose	Unspecified				\$14.85	\$14.46	\$16.59	\$15.85	\$15.37	\$14.96	\$12.50	
		North Korea		\$17.50									
YF	5-dose	Unspecified								\$1.28			
	10-dose	Unspecified				\$1.17	\$1.43	\$1.43	\$1.43	\$1.43			
		Brazil										\$1.28	
		France	\$1.40	\$1.17								\$1.53	

UNICEF Pricing FIGURE 8.8

This exhibit shows lowest price paid by UNICEF in 2016-2028 to suppliers for different vaccine presentations. Cells are color-coded to indicate a percentage increase (orange) or decrease (green) compared to UNICEF price from the previous year.

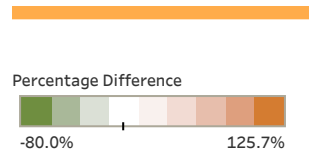
GSK prices for rotavirus vaccine were originally denoted in EUR currency and have been converted to USD.

Source: UNICEF website, January 2024



Vaccine	Vial Size	Company Name	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	
BCG	20-dose	AJ Vaccines				\$0.26	\$0.27	\$0.28	\$0.28	\$0.29	\$0.25	\$0.25				
		Bul Bio				\$0.09	\$0.09	\$0.10	\$0.10	\$0.10	\$0.14	\$0.14	\$0.15	\$0.15	\$0.16	
		GreenSignal	\$0.07	\$0.07	\$0.09	\$0.10	\$0.10									
		Intervax	\$0.08	\$0.09	\$0.09											
		Japan BCG	\$0.16	\$0.17	\$0.17	\$0.19	\$0.19	\$0.19	\$0.19	\$0.20	\$0.20	\$0.21	\$0.23	\$0.23	\$0.24	
		Serum	\$0.10	\$0.10	\$0.10	\$0.12	\$0.12	\$0.12	\$0.12	\$0.12	\$0.12	\$0.18	\$0.18	\$0.20	\$0.20	\$0.20
Covid-19	1-dose	CN BG Beijing						\$5.50	\$5.50							
		Pfizer									\$12.15	\$12.15				
	5-dose	Janssen					\$7.50	\$7.50	\$7.50	\$7.50						
	6-dose	Pfizer								\$6.75	\$6.75					
	10-dose	AstraZeneca					\$4.00	\$4.00								
		Moderna					\$10.00	\$7.00								
		Pfizer									\$6.80	\$6.80				
Serum						\$3.00	\$3.00									
DT	10-dose	Bio Farma			\$0.16	\$0.16	\$0.17	\$0.17	\$0.17	\$0.17	\$0.18	\$0.19	\$0.20	\$0.20		
		Bul Bio						\$0.17	\$0.17	\$0.20	\$0.21	\$0.22	\$0.22	\$0.23		
		Intervax	\$0.14	\$0.16	\$0.17											
		Serum				\$0.18	\$0.18									
DTwP	10-dose	Bio Farma	\$0.21	\$0.23	\$0.24											
		Biol E				\$0.19	\$0.19	\$0.19	\$0.19	\$0.19	\$0.19	\$0.23				
		Serum	\$0.20	\$0.20	\$0.20	\$0.17	\$0.17	\$0.17	\$0.17	\$0.18	\$0.19	\$0.25				
Penta	1-dose	Biol E	\$2.25		\$1.15	\$1.05	\$1.00	\$1.15	\$1.15	\$1.26	\$1.26	\$1.26	\$1.35	\$1.35		
		Janssen	\$2.35	\$0.90												
		LG		\$1.03	\$0.98	\$1.20	\$1.20									
		Panacea		\$1.40			\$0.90	\$1.05	\$1.05	\$1.15	\$1.15	\$1.15	\$1.15	\$1.15		
		Serum	\$2.25	\$0.90	\$1.10	\$1.20	\$1.20	\$1.15	\$1.15	\$1.29	\$1.29	\$1.29	\$1.38	\$1.38		
		Shantha				\$1.19	\$1.19	\$1.19								
	2-dose	LG	\$1.94													
	10-dose	Biol E	\$1.15		\$0.70	\$0.70	\$0.65	\$0.81	\$0.81	\$0.85	\$0.85	\$0.85	\$0.90	\$0.90		
		LG	\$1.35	\$0.68	\$0.65	\$0.69	\$0.69	\$0.78	\$0.78	\$0.78	\$0.78	\$0.78	\$0.78	\$0.78		
		Panacea	\$1.55							\$0.85	\$0.85	\$0.85	\$0.85	\$0.85		
		Serum	\$1.50	\$0.75	\$0.69	\$0.69	\$0.69	\$0.80	\$0.80	\$0.85	\$0.85	\$0.85	\$0.90	\$0.90		
		Shantha	\$1.65	\$0.85	\$0.85	\$0.75	\$0.75	\$0.75	\$0.75							
DTwP-HepB-Hib-sIPV	1-dose	Serum									\$4.90	\$4.50				
	10-dose	Serum									\$2.85	\$2.85				
Ebola	1-dose	Merck					\$98.60	\$98.60	\$98.60	\$98.60	\$98.60	\$98.60				
HepA	1-dose	Sinovac				\$6.99	\$6.99	\$7.55								
HepB	1-dose	LG	\$0.42	\$0.42	\$0.42	\$0.42	\$0.60	\$0.60	\$0.60							
		Serum	\$0.20	\$0.20	\$0.20	\$0.29	\$0.49	\$0.49	\$0.49	\$0.49	\$0.55	\$0.55	\$0.55	\$0.57		
	10-dose	LG	\$0.17	\$0.17	\$0.17	\$0.25	\$0.25	\$0.25	\$0.25	\$0.26	\$0.26	\$0.27				
		Serum	\$0.20	\$0.20	\$0.20	\$0.24	\$0.24	\$0.24	\$0.24	\$0.24	\$0.24	\$0.24	\$0.24	\$0.24		
HPV	1-dose	Merck	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50	\$4.50			
		Xiamen							\$2.90	\$2.90	\$2.90	\$2.90				
	2-dose	GSK	\$4.60	\$4.60	\$4.60	\$4.60	\$4.60	\$4.60	\$5.18	\$5.18	\$5.18	\$5.18				
IPV	1-dose	Bilthoven	\$2.80	\$2.80	\$2.80	\$3.50	\$2.80	\$2.80	\$2.80	\$2.80	\$2.80	\$2.80				
	5-dose	AJ Vaccines					\$2.45	\$2.45	\$1.90	\$1.85	\$1.85	\$1.85				
Bilthoven		\$1.90	\$1.90	\$1.90	\$2.95	\$3.10	\$3.10	\$2.50	\$1.70	\$1.50	\$1.50					

Vaccine	Vial Size	Company Name	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
IPV	5-dose	LG						\$1.75	\$1.50	\$1.25	\$1.25				
		Shantha			\$1.08	\$2.33	\$2.33	\$2.33	\$2.33						
	10-dose	Bilthoven									\$1.35	\$1.35			
		Sanofi	\$0.83	\$0.85	\$0.93	\$2.09	\$2.09	\$2.09	\$2.09	\$2.09					
JE	5-dose	CNBG Chengdu	\$0.41	\$0.41	\$0.41	\$0.45	\$0.45	\$0.45	\$0.45	\$0.45					
Malaria	2-dose	GSK									\$10.10	\$10.10	\$10.10		
		Serum										\$3.90	\$3.90		
Measles	5-dose	Serum			\$0.40	\$0.40	\$0.40	\$0.43	\$0.48	\$0.52	\$0.57	\$0.57	\$0.62	\$0.62	
	10-dose	Bio Farma	\$0.23	\$0.24	\$0.24	\$0.24	\$0.24	\$0.25	\$0.26	\$0.27	\$0.31				
		Sanofi	\$0.50												
		Serum	\$0.28	\$0.28	\$0.31	\$0.32	\$0.32	\$0.35	\$0.39	\$0.42	\$0.46				
MenA	10-dose	Serum	\$0.49	\$0.51	\$0.52	\$0.54	\$0.60	\$0.59	\$0.65	\$0.67					
MenACW Ps	10-dose	Bio-M		\$2.37	\$2.72	\$2.72	\$2.72	\$2.72	\$2.72	\$2.72					
MenACYW	1-dose	Pfizer			\$6.03	\$6.03	\$6.03								
	10-dose	Pfizer			\$6.03	\$6.03									
MenC	1-dose	Pfizer			\$9.12	\$9.12	\$9.12	\$9.12							
MMR	1-dose	Serum	\$2.37	\$2.37	\$2.85	\$2.85	\$2.85	\$2.95	\$3.24	\$3.56	\$3.56	\$3.73	\$3.73	\$3.91	
	2-dose	GSK	\$3.25	\$3.25	\$4.47	\$4.47	\$4.47	\$4.47	\$4.47	\$4.47					
	5-dose	Serum	\$1.15	\$1.15	\$1.45	\$1.45	\$1.45	\$1.47	\$1.62	\$1.78	\$1.78	\$1.95	\$1.95	\$2.14	
	10-dose	Serum	\$1.13	\$1.13	\$1.24	\$1.28	\$1.28	\$1.41	\$1.55	\$1.71	\$1.71	\$1.87	\$1.87	\$2.05	
MR	5-dose	Biol E							\$0.92	\$0.92	\$0.99				
		Serum			\$0.82	\$0.82	\$0.82	\$0.90	\$0.99	\$1.09					
	10-dose	Biol E					\$0.58		\$0.72	\$0.79	\$0.85				
		Serum	\$0.61	\$0.61	\$0.64	\$0.66	\$0.66	\$0.72	\$0.79	\$0.79	\$0.84				
OCV	1-dose	EuBiologics	\$1.70	\$1.30	\$1.20	\$0.70	\$0.71	\$0.73	\$0.86	\$1.10					
		Shantha			\$1.85	\$2.00	\$2.50	\$3.00	\$3.13	\$3.13					
bOPV	10-dose	Bharat			\$0.18	\$0.18	\$0.19	\$0.19	\$0.19	\$0.19	\$0.19	\$0.19			
		Bio Farma			\$0.14	\$0.14	\$0.14	\$0.14	\$0.14	\$0.15	\$0.16				
		GSK	\$0.18	\$0.18	\$0.18	\$0.18	\$0.18	\$0.18							
		Serum	\$0.19	\$0.19						\$0.20	\$0.20				
	20-dose	Bharat	\$0.13	\$0.13	\$0.12	\$0.12	\$0.13	\$0.13	\$0.13	\$0.13	\$0.13	\$0.13			
		Bio Farma	\$0.12	\$0.12	\$0.12	\$0.12	\$0.12	\$0.12	\$0.12	\$0.12	\$0.12	\$0.12			
		CNBG Beijing			\$0.10	\$0.09	\$0.10	\$0.09	\$0.12	\$0.12	\$0.12				
		CNBG Tiantan			\$0.10										
		GSK	\$0.14	\$0.14	\$0.14	\$0.14	\$0.14	\$0.14	\$0.14	\$0.14	\$0.14	\$0.10			
		Haffkine	\$0.13	\$0.13	\$0.11	\$0.11			\$0.11	\$0.11	\$0.11	\$0.11			
		Panacea							\$0.12	\$0.12					
		Sanofi	\$0.14	\$0.14	\$0.17	\$0.17	\$0.12	\$0.17	\$0.17						
		Serum	\$0.12	\$0.13	\$0.13	\$0.13	\$0.13	\$0.13	\$0.13	\$0.14	\$0.14				
mOPV	20-dose	Bio Farma			\$0.12	\$0.12									
		Haffkine			\$0.11										
PCV	1-dose	Pfizer	\$3.30	\$3.30	\$3.30	\$3.30	\$3.30	\$3.30	\$3.30	\$3.30	\$3.30	\$3.30			
		Serum					\$2.90	\$2.90	\$2.90	\$2.90	\$2.90				
	2-dose	GSK	\$3.40	\$3.05	\$3.05	\$3.05									
	4-dose	GSK			\$3.05	\$3.05	\$3.05	\$3.05	\$3.05	\$2.90	\$2.90				
		Pfizer		\$3.05	\$2.95	\$2.90	\$2.90	\$2.90	\$2.90	\$2.75	\$2.75				
5-dose	Serum					\$2.00	\$2.00	\$2.00	\$1.50	\$1.50					

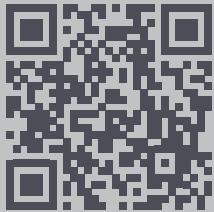


Vaccine	Vial Size	Company Name	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Rabies	1-dose	Serum	\$8.00			\$7.50	\$8.00	\$9.00	\$9.00						
Rota	1-dose	Bharat							\$1.35	\$1.35	\$1.35	\$1.35	\$1.35	\$1.35	\$1.35
		GSK	\$2.08	\$2.13	\$2.22	\$2.05	\$2.05	\$2.05			\$1.95	\$1.95	\$1.85	\$1.85	\$1.85
		Merck	\$3.50	\$3.20	\$3.20	\$3.20				\$0.95	\$0.95	\$1.05	\$1.05	\$1.15	\$1.15
	2-dose	Serum				\$0.95	\$0.95	\$0.95	\$0.80	\$0.80	\$0.80	\$0.80	\$0.80	\$0.80	\$0.80
	5-dose	Bharat			\$0.95	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.70	\$0.70	\$0.70	\$0.70
	10-dose	Bharat							\$0.60	\$0.60	\$0.60	\$0.50	\$0.50	\$0.50	\$0.50
	TCV	5-dose	Bharat			\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50			
Biol E									\$0.95	\$0.95	\$0.95				
Td	10-dose	Bio Farma	\$0.11	\$0.12	\$0.12	\$0.09	\$0.09	\$0.09	\$0.09	\$0.12	\$0.13	\$0.14	\$0.14	\$0.15	
		Biol E	\$0.10	\$0.10	\$0.10	\$0.11	\$0.11	\$0.11	\$0.11	\$0.12	\$0.12	\$0.13	\$0.14	\$0.14	
		Bul Bio				\$0.13	\$0.13	\$0.14	\$0.14	\$0.17	\$0.18	\$0.18			
		Intervax	\$0.15	\$0.15	\$0.13										
	Serum	\$0.13	\$0.13	\$0.13	\$0.11	\$0.11	\$0.11	\$0.11	\$0.12	\$0.13	\$0.13	\$0.14	\$0.14		
	20-dose	Biol E					\$0.10	\$0.10	\$0.10	\$0.11	\$0.11	\$0.12	\$0.13	\$0.13	
		Bul Bio					\$0.09	\$0.09	\$0.09	\$0.12	\$0.12	\$0.12	\$0.13	\$0.13	
		Serum				\$0.10	\$0.10	\$0.10	\$0.10	\$0.11	\$0.11	\$0.12	\$0.12	\$0.12	
TT	10-dose	Bio Farma	\$0.10	\$0.11	\$0.11	\$0.09									
		Biol E	\$0.08	\$0.08	\$0.08	\$0.11									
		Intervax	\$0.11	\$0.12	\$0.12										
		Serum	\$0.13	\$0.13	\$0.13										
		Shantha	\$0.10	\$0.11	\$0.11										
	20-dose	Biol E	\$0.05	\$0.05	\$0.05	\$0.07									
		Bul Bio				\$0.07									
YF	5-dose	Bio-M	\$1.14	\$1.17											
		Chumakov	\$0.84	\$0.88	\$0.97	\$0.97	\$0.97	\$0.97	\$0.97	\$1.15	\$1.15				
	10-dose	Bio-M	\$1.05	\$1.08		\$1.18	\$1.18	\$1.28	\$1.28	\$1.28	\$1.28				
		Chumakov	\$0.84	\$0.88	\$0.97	\$0.97	\$0.97	\$0.97	\$0.97	\$1.15	\$1.15				
		Pasteur	\$1.19	\$1.19	\$1.25	\$1.31	\$1.31	\$1.46	\$1.46	\$1.53	\$1.53				
		Sanofi	\$1.20	\$1.31	\$1.43	\$1.44	\$1.44	\$1.44	\$1.53	\$1.53	\$1.53				
	20-dose	Pasteur	\$0.77	\$0.85		\$0.89	\$0.89								

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