Working Paper

Situation Analysis of Immunization Expenditure

KEY FACTS

World Health Organization

Situation Analysis of Immunization Expenditure

KEY FACTS

Resource knowledge in the context of IA2030[1]

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[1] https://www.who.int/immunization/immunization_agenda_2030/en/

Introduction

Immunization is an intervention that provides excellent value for the money, returning US$ 54 for every dollar invested.2 It should, therefore, form a cornerstone for any policies designed to enhance primary health care and make progress towards Universal Health Coverage. Yet, analyses show that immunization programs often remain under-invested, with governments choosing to allocate resources towards other interventions (within or outside the health sector):

- Petu reported that the share of routine immunization and vaccines paid by governments decreased an average of 50% in the African region between 2010 and 2014[3].
- Helen Saxenian et al. looked at deteriorating immunization coverage in lower income settings of the Middle East and North Africa region, where conflicts and political unrest is high. "Most of the countries have been slow to adopt the newer, more expensive life-saving vaccines mainly because of financial constraints and the socioeconomic context."[4] Countries will need to strengthen or reconstruct health systems to achieve their immunization targets.[5]
- Ozawa et al. projected expected immunization costs and expected financing in 94 low- and middle-income countries between 2016 and 2020, finding a "total funding gap of $7.6 billion [over the 5 years, with] (…) more than half (65%) of the resources to meet this funding gap (…) required for service delivery."[6]

This Immunization Expenditure Situation Analysis working paper seeks to disseminate common knowledge on immunization expenditure to support policy makers in making evidence-based decisions. Key facts are presented as responses to common questions. This is a living document, which will be expanded with answers to additional questions that arise Do not hesitate to send your feedback and questions to project leader Nathalie Vande Maele at vandemaelen@who.int.

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2 Johns Hopkins University - International Vaccine Access Center (IVAC) (2019). Methodology Report: Decade of Vaccines Economics (DOVE) Return on Investment Analysis. link

3 Petu A. Towards Immunization Financing Sustainability in Africa. J Immunol Sci. 2018;Suppl(13):89–93.

4 Saxenian H, Sadr-Azodi N, Kaddar M, Senouci K. Immunisation financing and programme performance in the Middle East and North Africa, 2010 to 2017. BMJ Global Health 2019;4:e001248.

5 More information on immunization financing is available at https://www.immunizationfinancing.org/en and Sabin Vaccine Institute. A Decade of Sustainable Immunization Financing. 2019. https://www.sabin.org/sites/sabin.org/files/a_decade_of_sustainable_immunization_financing.pdf.

6 Ozawa S, Grewal S, Portnoy A, et al. Funding gap for immunization across 94 low- and middle-income countries. Vaccine. 2016;34(50):6408–6416. doi:10.1016/j.vaccine.2016.09.036

Q1 How are immunization expenditure distributed globally?

KEY FACTS

- Globally, we pay US$ 62 per surviving infant or US$ 1.20 per capita on immunization[7].
- High-income countries are responsible for 21% of all immunization expenditure, supporting 9% of all surviving infants.
- Countries in the lowest two income brackets are responsible for 34% of all immunization expenditure to support 61% of all surviving infants.

Analysis

When evaluating global expenditure, countries are divided into four categories, according to World Bank income groups. Expenditure per surviving infant is calculated as expenditure on routine immunization for all countries of each group divided by the total number of surviving infants in each income group.

Low-income and low-middle income countries spend US$ 29.50 per surviving infant (or US$ 0.70 per capita) while high-income countries spend almost US$ 1000 per surviving infant (or US$ 10 per capita).[8] High-income countries are outliers compared to other income groups (see Fig. 1).

The global average expenditure is US$ 62 per surviving infant. When calculating global expenditure per surviving infant, that is world expenditure on routine immunization divided by total surviving infants worldwide, immunization expenditure of high-income countries carries less weight than the data in Fig. 1 suggest. This is because their population share is small. When we calculate the simple arithmetic mean of all countries' expenditure on immunization per surviving infant, average expenditure per surviving infant almost triples to reach $US 174 (and the per capita immunization expenditure doubles from 1.2 to 2.5 immunization expenditure).

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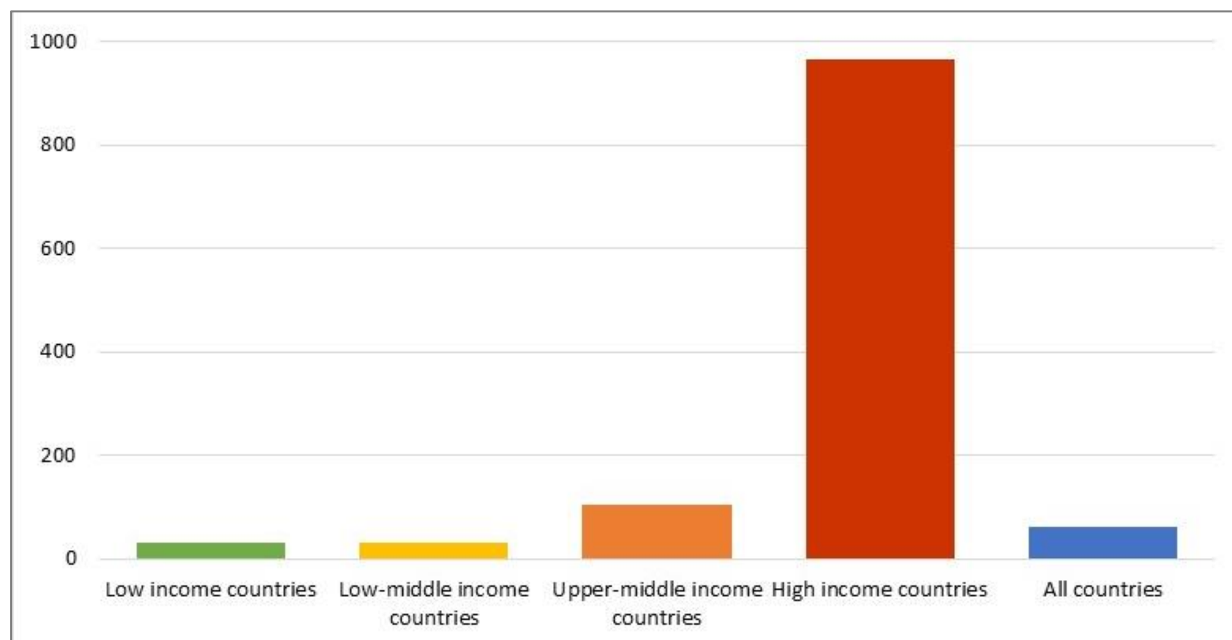
7 Data is expressed in US$ using exchange rate (expenditure is not expressed in PPP).

8 High-income countries have a lower proportion of infants in their populations compared to less wealthy countries, so the ratio between spending per infant to spending per capita is greater.

Fig. 1. **Expenditure on routine immunization per surviving infant, globally and by income level group, in US$, 2017**



Data sources: WHO/UNICEF Joint Reporting Form (JRF), UNPOP surviving infant data, and IMF exchange rate Country groups are determined using World Bank income groups as published on July 1, 2019.

Grouping by geography instead of income reveals a similar trend in expenditure. In South-East Asia (WHO region), less than US$ 25 is spent per surviving infant. On the other hand, the Americas (WHO region) spend the most per surviving infant, ten times more than South-East Asia, or US$ 235 per surviving infant. Interestingly, the Americas spend 25% more than European countries (see Table 2).

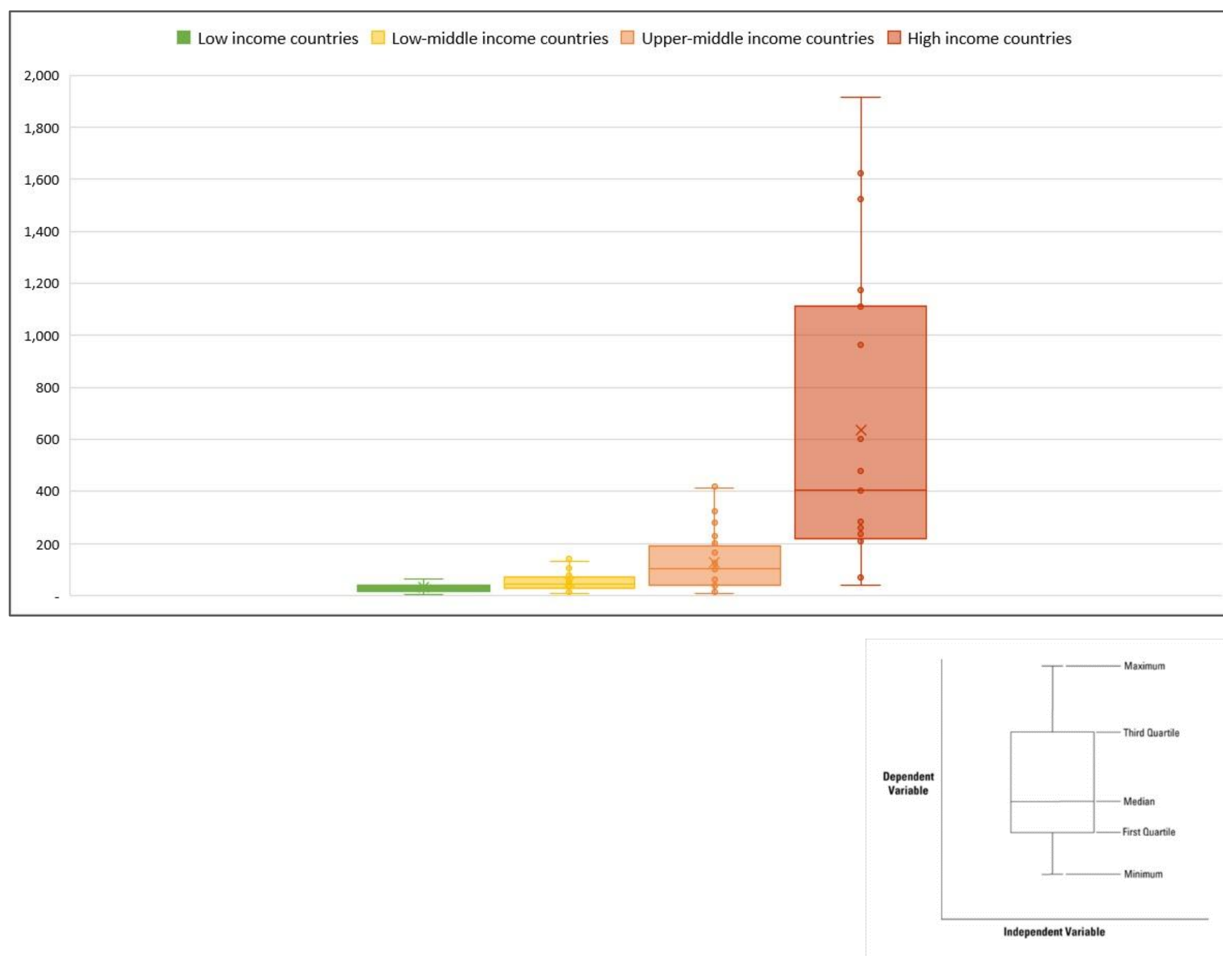
Table 2. **Expenditure on Routine Immunization per Surviving Infant by WHO region, in 2017 (current USD)**

Regions	Africa (AFRO)	Americas (AMRO)	Eastern Mediterr-anean (EMRO)	European (EURO)	South East Asia (SEARO)	Western Pacific (WPRO)
Regional expenditure on RI per surviving infant, US$	39	235	34	186	23	79

Sources: WHO/UNICEF Joint Reporting Form (JRF), UNPOP surviving infant data.

The spread between countries' expenditure per surviving infant is large, especially in high-income countries (see Fig. 3). Only low-income countries show hardly any spread between countries spending level. In fact, we note that the higher the income group, the larger the spread. This needs to be further investigated to understand the underlying reasons.

Fig. 3. **Spreads of total routine immunization expenditure per surviving infant by income level, in US$, 2017**



Data sources: WHO/UNICEF Joint Reporting Form (JRF), UNPOP surviving infant data, and IMF exchange rate Country groups are determined using World Bank income groups as published on July 1, 2019.

The differences in expenditure levels between income groups is largely explained by differences in prices paid per vaccine and by the number of vaccines introduced in each country. Typically, lower income countries can procure vaccines through the UNICEF supply division (UNICEF SD) or the PAHO revolving fund (PAHO RF)[9] at much lower price than self-procured countries.[10] The WHO 2019 Global Vaccine Market Report shows that self-procuring middle income countries pay nearly three times the rate of middle income countries that are eligible for grants from Gavi, the Vaccine Alliance (hereafter referred to as Gavi), [11], [12] and they pay over twice as much as countries procuring through PAHO RF. Self-procuring high-income countries pay more than five times the rate of self-procuring middle income countries, on average.

Similarly, more vaccines (or more doses of vaccines for vaccines with multiple doses recommended) are introduced in routine immunization of higher income countries than in lower income settings. On average, high income countries use 74% more vaccines than low income countries, and 23% more than middle income countries.[13]

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[9] https://www.paho.org/hq/index.php?option=com_content&view=article&id=1864:paho-revolving-fund&Itemid=4135&lang=en

[10] For more information on procurement mechanisms, read https://www.who.int/immunization/programmes_systems/financing/analyses/Brief_12_Pooled_Procurement.pdf

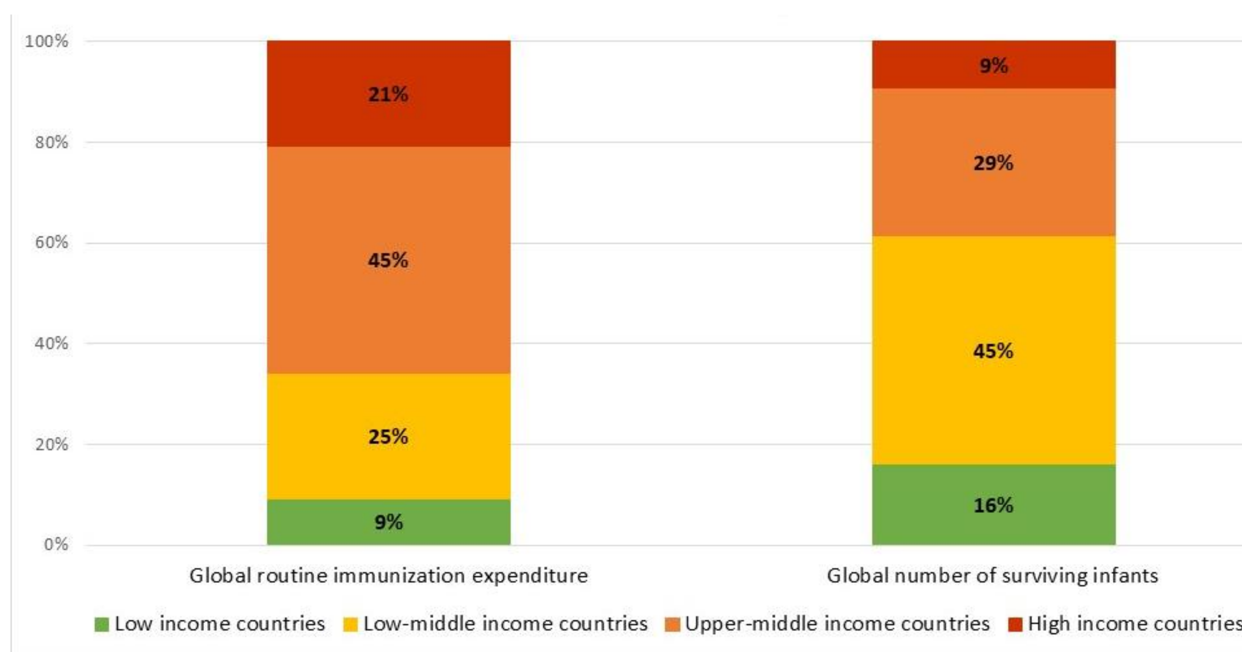
[11] WHO 2019 Global Vaccine Market Report, not yet published

[12] https://www.gavi.org/

[13] WHO JRF-based database tracking the year of introduction of a selected number of vaccine, antigens, or doses in routine immunization (Hepatitis B containing vaccine (HepB), Heamophilius Influenzea type b containing vaccine (Hib), Pneumoccocal

Data also show that the distribution of expenditure on immunization between income groups is not proportional to the distribution of surviving infants. High income countries spend 21% of all immunization expenditure but only account for 9% of all surviving infants. In contrast, low- and low-middle income countries spend 34% of all immunization expenditure but represent 61% of all surviving infants (Fig. 4).

Fig. 4. **Share of total routine immunization expenditure and total surviving infants by income level, 2017**



Data sources: WHO/UNICEF Joint Reporting Form (JRF), UNPOP surviving infant data, and WHO Global Health Expenditure Database (GHED). Country groups are determined using Gavi 2019 status.

FURTHER AREA FOR RESEARCH

- Investigate in more detail the cause for discrepancies in expenditure per surviving infant be-tween countries within each income group.

Conjugate Vaccine (Pneumo_conj), Measles 2nd dose containing vaccine (MCV2), Rubella containing vaccine, Mumps containing vaccine, Varicella Vaccines, Hepatitis A containing vaccine (HepA), Yellow Fever vaccine (YF), Japanese Encephalitis vaccine (JE), Rotavirus vaccine, Human Papillomavirus Vaccine (HPV), Meningococcus vaccines (Mening), Seasonal Influenza vaccine, Pneumoccocal Polysacharide vaccine (Pneumo_ps), Incativated Polio containing vaccine (IPV), Acellular Pertussis containing vaccine (aP)). Any introduced vaccines are counted as positive, regardless of coverage levels or if it is introduced in only part of the country, in case of outbreaks, or for risk groups only.

Data sources & Methodology

Data sources used include:

- WHO/UNICEF Joint Reporting Form (JRF), published in December 2019. https://www.who.int/immunization/programmes_systems/financing/data_indicators/en/
- United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects: The 2019 Revision.
- Exchange rate, World Bank World Development Indicators, extracted December 2019. https://data.worldbank.org/indicator/PA.NUS.FCRF

Country groups for data from any year were assigned based on:

- World Bank income groupings as published on July 1, 2019 (FY 2020) http://databank.worldbank.org/data/download/site-content/OGHIST.xls
- Gavi 2019 country status.

Averages:

- Fig. 1 and Table 2 calculate a ratio for each group, using the total expenditure of a country group divided by the number of surviving infants in the same country group.

Q2 How does immunization compare to other health expenditure?

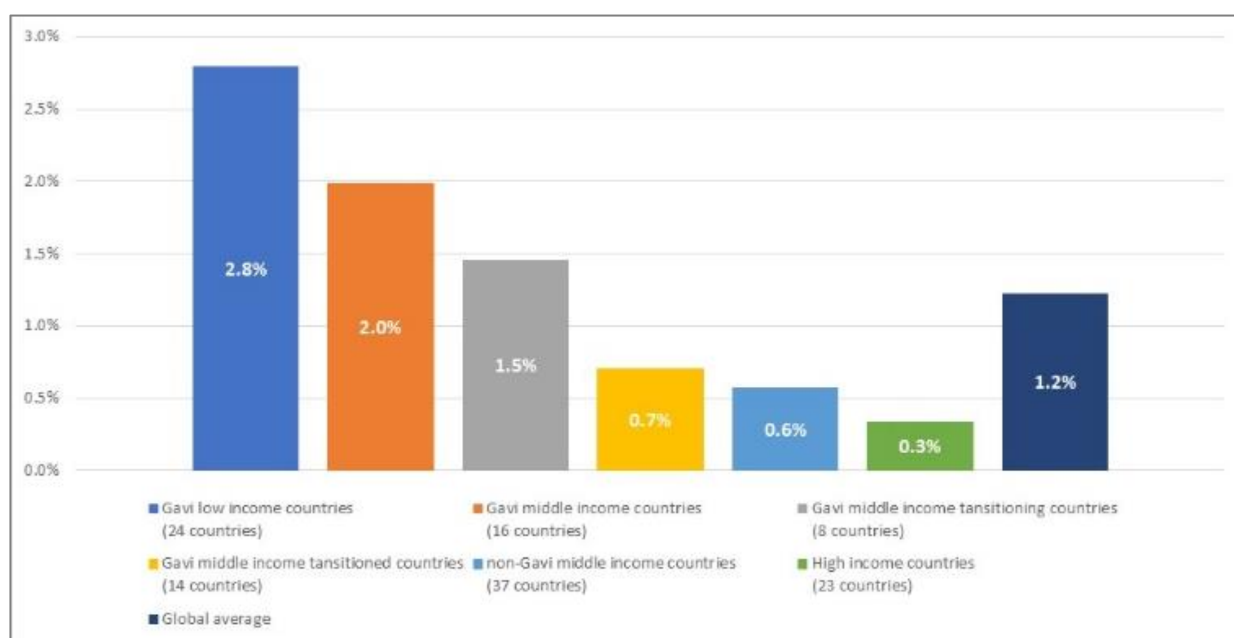
KEY FACTS

- 2% of current global health expenditure is spent on immunization.
- 0.006% of world GDP is spent on immunization globally.

Analysis

While higher income countries spend relatively more on immunization per surviving infant, they spend relatively less on immunization as share of current health expenditure (CHE).[14] High-income countries spend 0.3% of CHE on immunization compared to 2.8% in low income and low-middle income countries (Fig. 5).

Fig. 5. **Average expenditure on routine immunization as a % of current health expenditure - 2017**



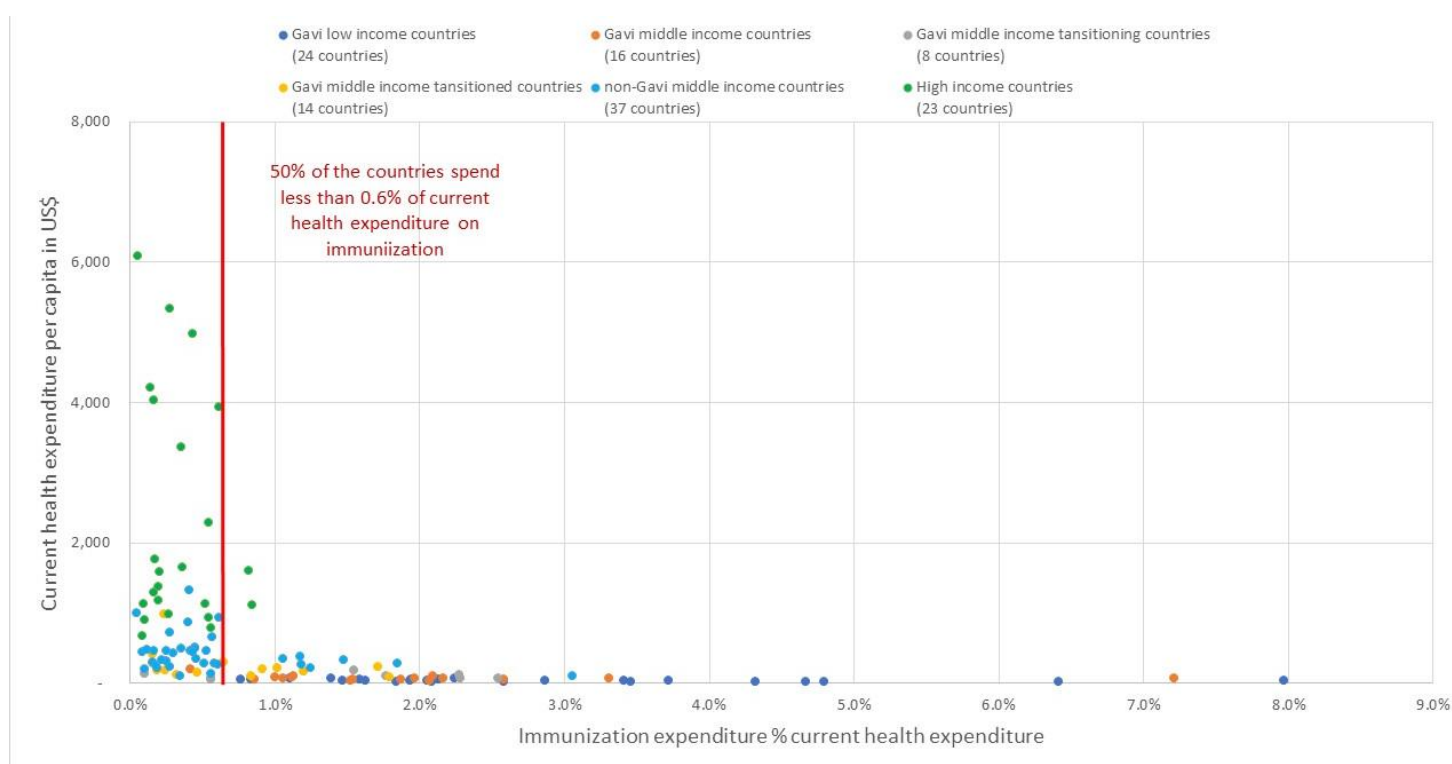
Data sources: WHO/UNICEF Joint Reporting Form (JRF), UNPOP surviving infant data, and WHO Global Health Expenditure Database (GHED). Country groups are determined using Gavi 2019 status.

[14] Estimates of current health expenditures include healthcare goods and services consumed during each year. This indicator does not include capital health expenditures such as buildings, machinery, IT and stocks of vaccines for emergency or outbreaks.

Several factors could explain the variability in immunization spending. In high-income countries, immunization costs are low compared to expensive tertiary care technologies.[15] These countries also consume a greater variety of health goods and services compared to lower income countries.

The share of immunization expenditure as a fraction of CHE undergoes an expected but important drop from 1.5% to 0.7% as countries transition from Gavi, the main external source of immunization financing. The small share of 0.7% is partially explained by more favourable vaccine pricing for Gavi middle-income transitioned countries versus other countries in the same or higher income group.[16] But the lower share allocated to immunization may also reflect dis-investment in immunization. Fig. 6 also depicts the sudden decrease in the share of current health expenditure spent on immunization as current health expenditure per capita increases.

Fig. 6. **Expenditure on immunization as a % of current health expenditure (CHE) & Current health expenditure per capita in US$, 2017**



Data sources: WHO/UNICEF Joint Reporting Form (JRF) and WHO Global Health Expenditure Database (GHED)
Country groups are determined using Gavi 2019 status.

FURTHER AREA FOR RESEARCH

- Further research is needed to explain the sudden decrease in the share of current health expenditure spent on immunization and highlight potential risks.

[15] Tertiary care is highly specialized medical care usually over an extended period of time that involves advanced and complex procedures and treatments performed by medical specialists in state-of-the-art facilities (https://www.merriam-webster.com)
[16] https://www.who.int/immunization/programmes_systems/procurement/mi4a/en/

Data sources & Methodology

Data sources used include:

- WHO/UNICEF Joint Reporting Form (JRF), published in December 2019. https://www.who.int/immunization/programmes_systems/financing/data_indicators/en/
- Exchange rate, World Bank World Development Indicators, extracted December 2019. https://data.worldbank.org/indicator/PA.NUS.FCRF
- Current health expenditure, WHO Global Health Expenditure Database (GHED), extracted December 2019.

Country groups for data from any year were assigned based on:

- using World Bank income groupings as published on July 1, 2019.
- using Gavi 2019 country status.

Averages:

- Fig. 5 shows unweighted average, that is the average of countries' share of immunization expenditure as a percentage of current health expenditure.

Q3 Who pays the bill?

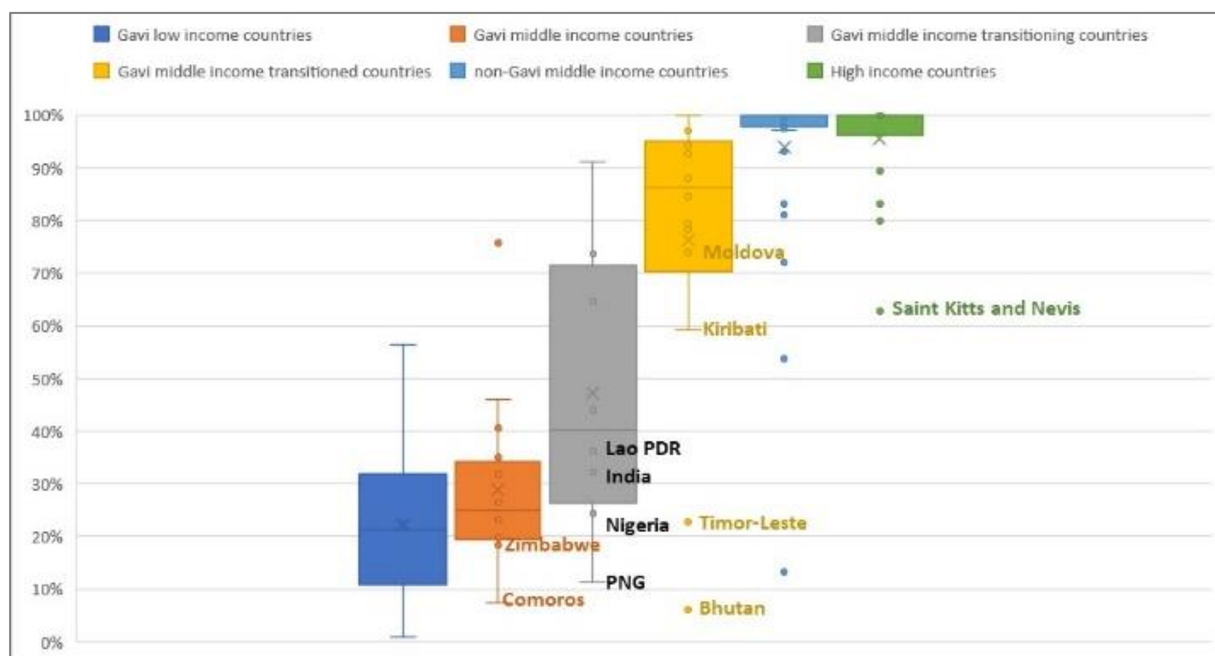
KEY FACTS

- Governments pay for 78% of routine immunization expenditure, globally.
- Low-income Gavi-eligible countries show a reversed pattern, with governments paying 22% of immunization expenditure and external aid paying the majority of costs.
- Immunization is globally more aid-dependent than other programs.

Analysis

Globally, governments pay for 78% of immunization expenditure and external aid or private sector pay 22% of routine immunization expenditure.[17] We observe large variations between income groups and Gavi status: on average, low income Gavi-eligible countries show a reverse pattern to the global one. In these countries, the government pays for 22% of immunization expenditure while external aid covers 78% (Fig. 7). In high-income countries governments pay for 96% of immunization expenditure, on average.

Fig. 7. **Share of immunization expenditure paid by government, 2017**



Data sources: WHO/UNICEF Joint Reporting Form (JRF)
Country groups are determined using Gavi 2019 status.

It would be expected that Fig. 7 on the share of domestic public spending on immunization would show a sharp rise in countries transitioning away from Gavi, the Vaccine Alliance, but we note large variations in the 2017 data. These reflect the challenges that some countries have been facing in transitioning out of

[17] WHO JRF immunization financing data: https://www.who.int/immunization/programmes_systems/financing/data_indicators/en/

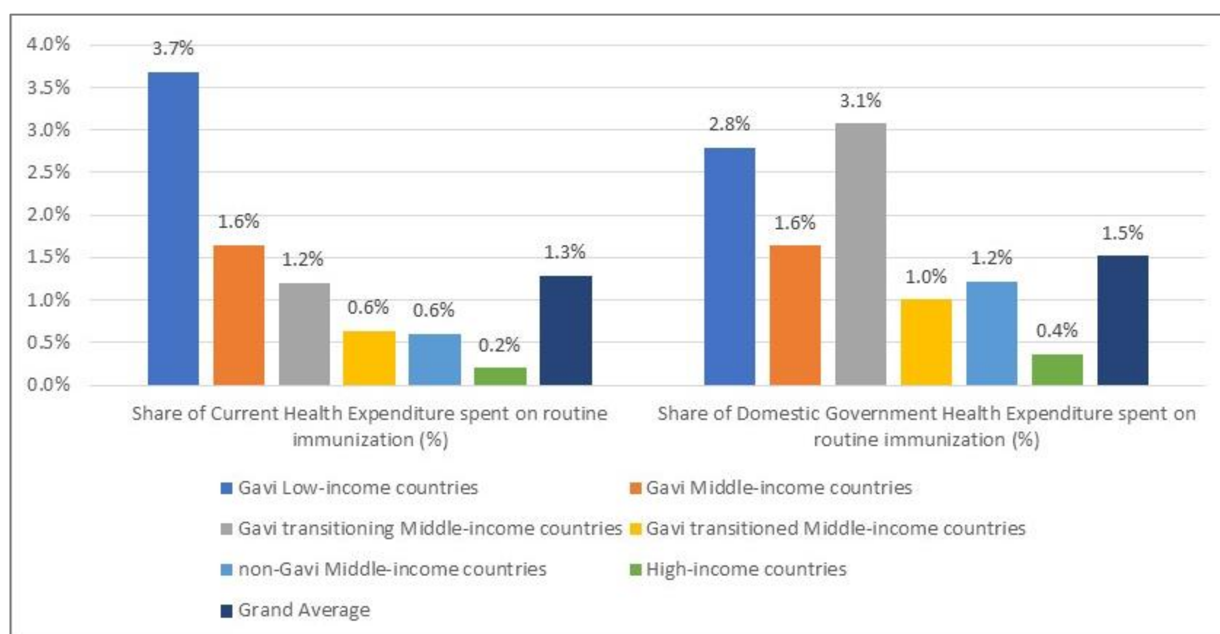
Gavi. For example, governments in some transitioning countries (grey box plot) appear to pay less than 25% of all immunization expenditure. Gavi transition periods for these countries–Nigeria and PNG–have been extended to account for this and other challenges. Other transitioning countries listed on the graph (e.g., Lao People's Democratic Republic and India with less than 40% paid by government and transition planned for 2022) are at risk for not successfully transitioning when aid funding stops because government spending may not be sufficient.

Similarly, some governments of transitioned countries (yellow box plot) still rely on external aid for 25% or more of their immunization expenditure, which raises a red flag about the sustainability of their transition.

When looking at Gavi-eligible middle-income countries (orange box plot) that are entering the preparatory transition phase in 2020, Zimbabwe and Comoros appear to still be heavily relying on external aid with government spending paying less than 20%.

Just like the shares of current health expenditure spent in immunization, domestic public spending allocated to immunization is also very small, ranging from 0.5% to 3% of domestic government health resources, with the share dropping as countries become richer.

Fig. 8. **Share of total and domestic current health expenditure spent on routine immunization, 2016**

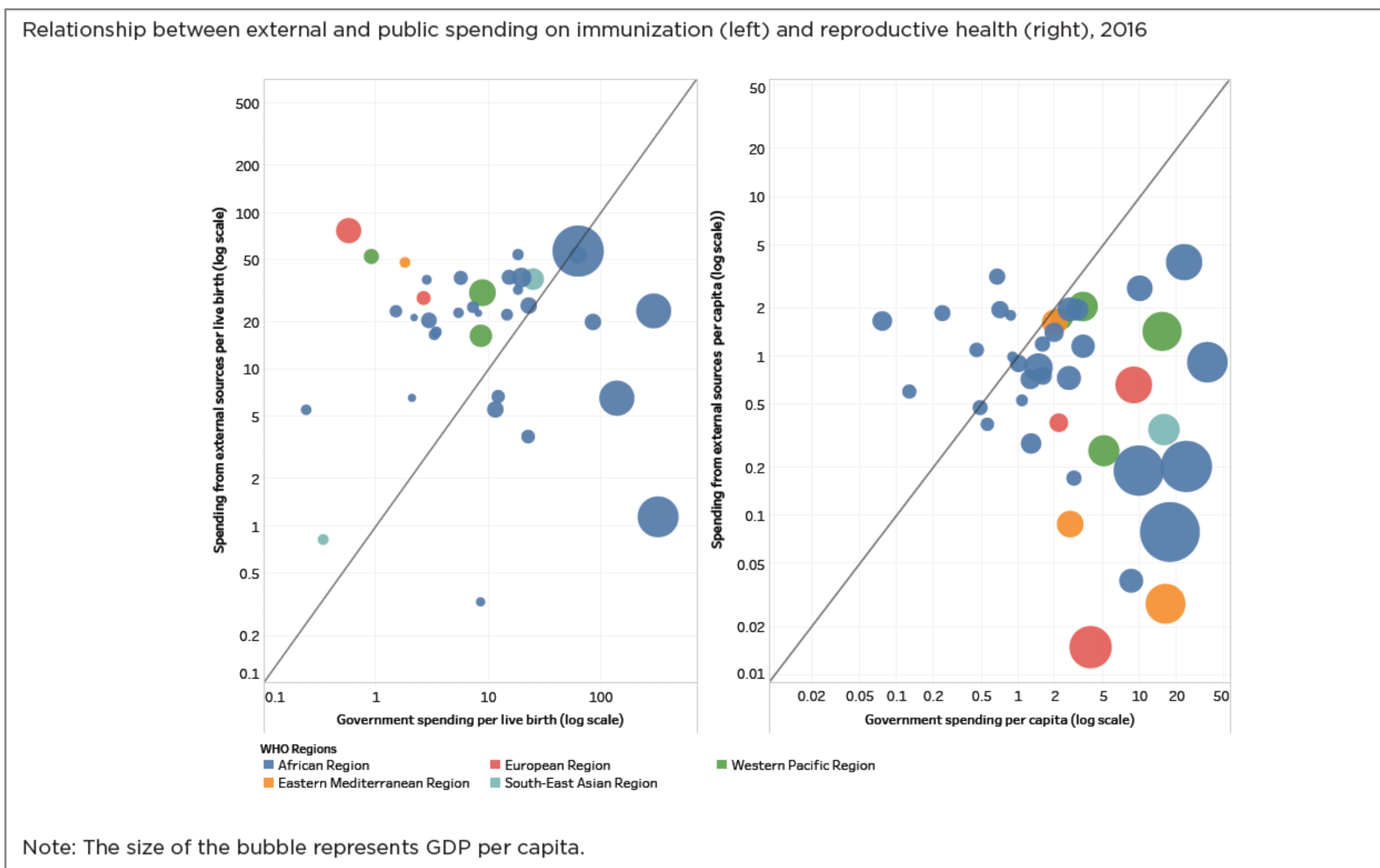


Data source: WHO/UNICEF Joint Reporting Form (JRF) and WHO Global Health Expenditure Database (GHED)
Country groups are determined using Gavi 2019 status.

Overall, immunization remains a relatively more aid-dependent health program compared to other programs such as reproductive health (Fig. 9), where most funds come from domestic sources. This is somewhat surprising, because costs are relatively low and offering free immunization is a cost-effective way to control the spread of infectious diseases.[18].

[18] Xu K et al. Public Spending on Health: A closer Look at Global Trends. In: WHO/int Public Health Financing [website].World Health Organization; 2018 (https://www.who.int/health_financing/documents/health-expenditure-report-2018/en/).

Fig. 9. **Immunization still relies heavily on external funding in most low- income countries, compared to reproductive health.**



Graph taken from WHO Global Report: Public Spending on Health: A Closer Look at Global Trends[19].

FURTHER AREA FOR RESEARCH

- Review the input components of immunization expenditure, which could explain the larger share of external funding in immunization compared to reproductive health or other programs such as Malaria.

[19] Xu K et al. Public Spending on Health: A closer Look at Global Trends.

Data sources & Methodology

Data sources used include:

- WHO/UNICEF Joint Reporting Form (JRF), published in December 2019. https://www.who.int/immunization/programmes_systems/financing/data_indicators/en/
- Exchange rate, World Bank World Development Indicators, extracted December 2019. https://data.worldbank.org/indicator/PA.NUS.FCRF
- Current health expenditure and Domestic General Government Health Expenditure, WHO Global Health Expenditure Database (GHED), extracted December 2019.

Country groups for data from any year were assigned based on:

- using Gavi 2019 country status.

Averages:

- Fig. 8 shows unweighted average, that is the average of countries' share of immunization expenditure as a percentage of current health expenditure, total and funded by Domestic general government health expenditure.

Q4 How has immunization spending changed in the past decade?

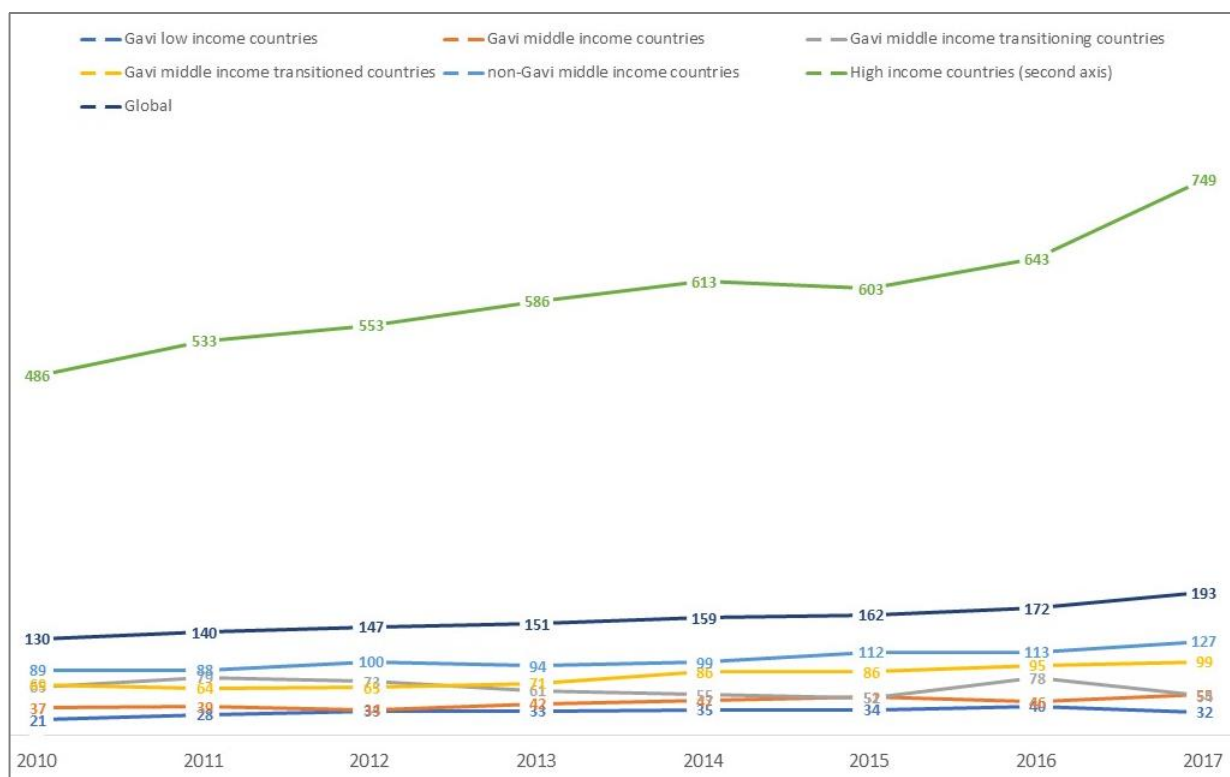
KEY FACTS

- Expenditure on routine immunization increased by almost 50% since 2010, but the share paid by government declined by 4%.

Analysis

Globally, immunization expenditure increased by almost 50% from 2010 to 2017. Yet, expenditure has been fluctuating in Gavi middle-income countries currently transitioning (Fig. 10, grey line).

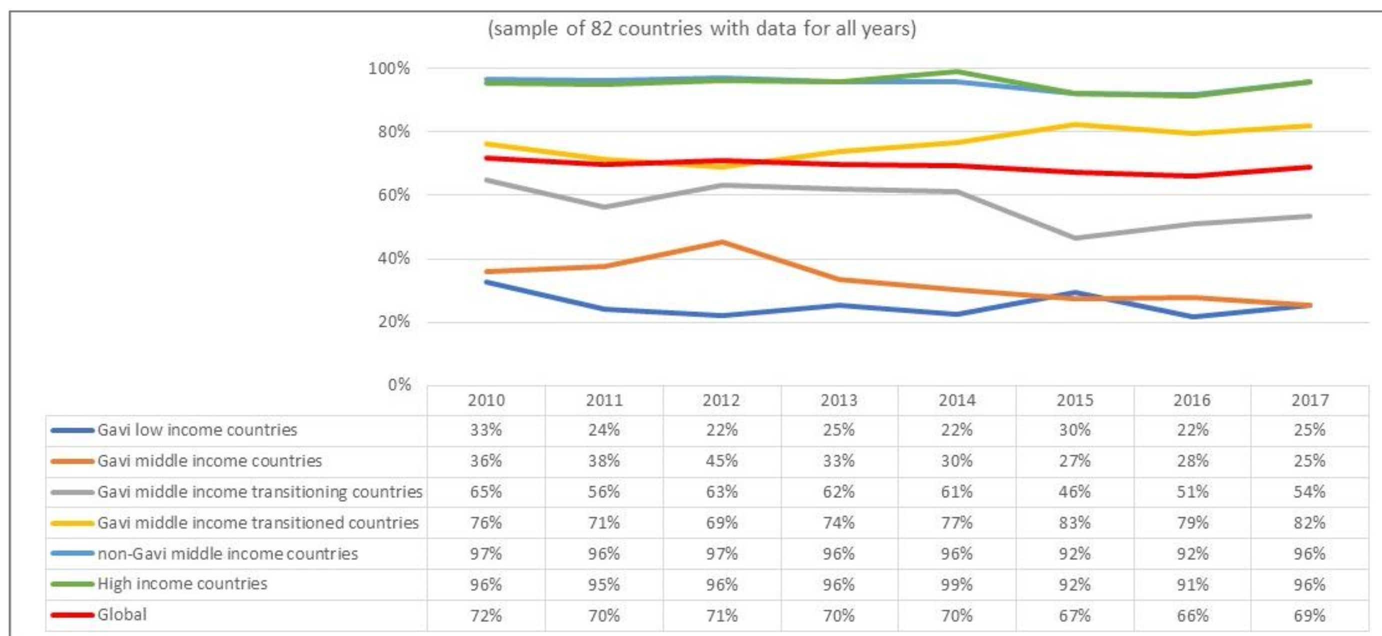
Fig. 10. **Evolution of the average Immunization expenditure per surviving infant by Gavi and income level group, between 2010-2017 (in current USD)**



Data source: WHO/UNICEF Joint Reporting Form (JRF) and UNPOP – non-weighted average
Country groups are determined using Gavi 2019 status.

However, the share of immunization expenditure paid by governments has slightly been decreasing at global level (-4%). The downward trend was particularly noticeable in Gavi middle-income countries, including transitioning middle-income countries (Fig. 11).

Fig. 11. Evolution of the average share of government in total routine immunization expenditure, by Gavi and income level groups, between 2010-2017 (in%)

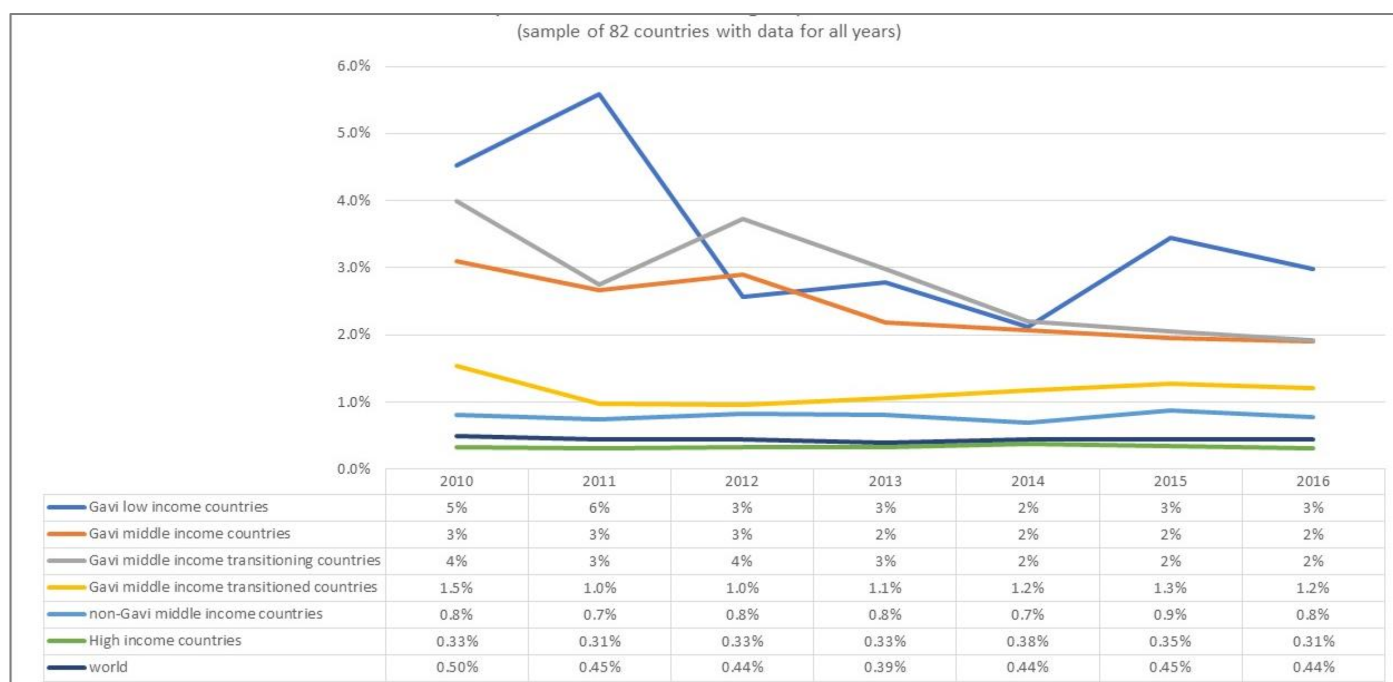


	2010	2011	2012	2013	2014	2015	2016	2017
Gavi low income countries	33%	24%	22%	25%	22%	30%	22%	25%
Gavi middle income countries	36%	38%	45%	33%	30%	27%	28%	25%
Gavi middle income transitioning countries	65%	56%	63%	62%	61%	46%	51%	54%
Gavi middle income transitioned countries	76%	71%	69%	74%	77%	83%	79%	82%
non-Gavi middle income countries	97%	96%	97%	96%	96%	92%	92%	96%
High income countries	96%	95%	96%	96%	99%	92%	91%	96%
Global	72%	70%	71%	70%	70%	67%	66%	69%

Data source: WHO/UNICEF Joint Reporting Form (JRF)
Country groups are determined using Gavi 2019 status.

Similarly, the share that governments allocate to routine immunization also declined globally (-12%). This shift is driven by low- and middle-income countries, which have experienced the greatest decrease in government share allocated to immunization (Fig. 12).

Fig. 12. Evolution of the average share domestic government expenditure allocated to routine immunization, by Gavi and income level groups, between 2010-2017 (in%)



	2010	2011	2012	2013	2014	2015	2016
Gavi low income countries	5%	6%	3%	3%	2%	3%	3%
Gavi middle income countries	3%	3%	3%	2%	2%	2%	2%
Gavi middle income transitioning countries	4%	3%	4%	3%	2%	2%	2%
Gavi middle income transitioned countries	1.5%	1.0%	1.0%	1.1%	1.2%	1.3%	1.2%
non-Gavi middle income countries	0.8%	0.7%	0.8%	0.8%	0.7%	0.9%	0.8%
High income countries	0.33%	0.31%	0.33%	0.33%	0.38%	0.35%	0.31%
world	0.50%	0.45%	0.44%	0.39%	0.44%	0.45%	0.44%

Data source: WHO/UNICEF Joint Reporting Form (JRF) and WHO Global Health Expenditure Database (GHED)
Country groups are determined using Gavi 2019 status.

FURTHER AREA FOR RESEARCH

- Analyse reasons for decreasing investment in immunization.

Data sources & Methodology

Data sources used include:

- WHO/UNICEF Joint Reporting Form (JRF), published in December 2019. https://www.who.int/immunization/programmes_systems/financing/data_indicators/en/
- Exchange rate, World Bank World Development Indicators, extracted December 2019. https://data.worldbank.org/indicator/PA.NUS.FCRF
- Current health expenditure and Domestic General Government Health Expenditure, WHO Global Health Expenditure Database (GHED), extracted December 2019.

Country groups for data from any year were assigned based on:

- using Gavi 2019 country status.

Averages:

- Fig. 10–12 depict unweighted average, that is the arithmetic mean of countries' shares.

Q5 How should immunization expenditure change to progress towards IA2030?

KEY FACTS

- Expenditure on immunization in low- and middle-income countries may need to increase by 30% to make progress towards IA2030.
- Past trends showed a stagnation of domestic and aid funding for immunization.

Analysis

Stenberg et al. estimated investments in health systems needed to expand service provision enough to reach the targets of Sustainable Development Goal (SDG) 3, good health and well-being. Health goals combined objectives from all programs, including immunization. The researchers recommended that a total of US$ 35 billion (2014 prices) should be invested between 2016 and 2030 in 64 low- and middle-income countries.[20] This would mean about 30% more than what these countries are currently spending.

The Institute for Health Metrics and Evaluation (IHME) development aid for health (DAH) analysis shows that aid almost tripled from 2000 to 2018, but most of the growth occurred by 2010. Aid for newborn and child health–the closest proxy to aid for immunization–almost quadrupled from 2000 to 2015 but has declined since 2015 (Table 13). Immunization aid for low and low-middle income countries is expected to continue its downward trend. Countries will be challenged to fill the gap with domestic resources, which are at risk following COVID-19 health and economic impacts. The recent US$ 10 billion pledge to Gavi, however, provides hope that aid may stabilize.

Table 13. **IHME. Financing Global Health 2018: Countries and Programs in Transition. Table B5: Development assistance for health by health focus area and program area, 1990–2018**

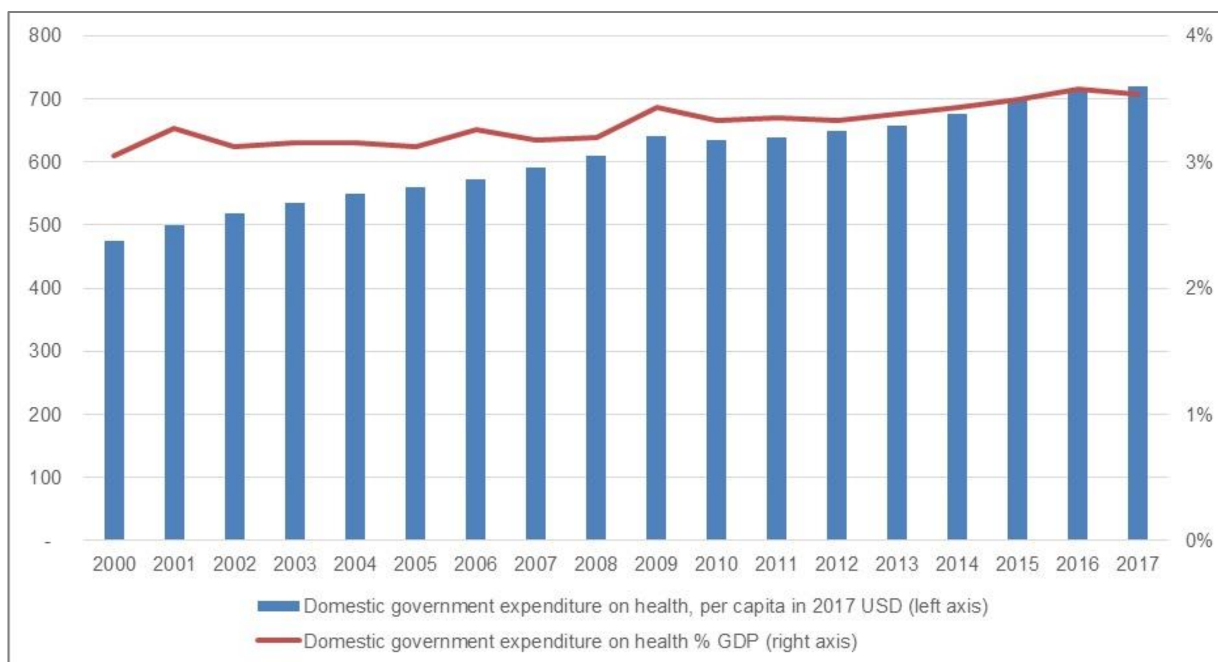
Health focus areas and program areas	2000	2005	2010	2015	2018*
Total, US$ millions	**13,467**	**21,475**	**35,014**	**37,663**	**38,908**
Newborn and child health	**1,968**	**3,016**	**4,833**	**8,104**	**7,812**
Growth for newborn and child health		***53%***	***60%***	***68%***	***-4%***

**2018 estimates are preliminary*

On the positive side, average domestic government expenditure on health per capita has been increasing since 2000, both in absolute dollars and as a share of GDP (Fig. 14).

[20] Ambitious scale up scenario: projected Gavi Strategic Demand Forecast 2015 through 2030, and included programme support costs include training, monitoring, supervision, programme administration costs, and cost of Measles, Polio, HPV, Rotavirus, Pentavalent, DPT, Hib, Hep B, BCG, Pneumococcal, Yellow Fever, Meningitis, and Japanese Encephalitis vaccines.

Fig. 14. **Evolution of average domestic public spending on health, 2000-2017**



Data source: WHO Global Health Expenditure Database (GHED)

Typically, public spending on health increases as a country's income grows[21]. If economic trends continue to increase on average until 2030, we could expect immunization resources to also increase. However, even before the COVID-19 pandemic, the IMF was projecting a stagnation of general government expenditure or a slight decrease as a share of GDP in most regions of the world until 2024.[22] [23]

Policy makers will need to closely monitor economic growth, fiscal space, and external aid for health and immunization, to identify risks and opportunities. A clear effort will be needed to examine ways to increase efficient use of health resources. Immunization advocates will need to work with the rest of the health sector to ensure mobilization of resources, effective and efficient use of resources, and equitable distribution of funds.

FURTHER AREA FOR RESEARCH

- Resource mapping at global level for immunization (mapping of domestic and external resources for coming few years)

[21] WHO. “Public Spending on Health: A closer Look at Global Trends.” 2018. https://www.who.int/health_financing/documents/health-expenditure-report-2018/en/

[22] IMF. Fiscal Monitor: How to Mitigate Climate Change. 2019. - https://www.imf.org/en/Publications/FM/Issues/2019/09/12/fiscal-monitor-october-2019

[23] IMF STAFF DISCUSSION NOTE. Fiscal Policy and Development: Human, Social, and Physical Investment for the SDGs. 2019. SDN/19/03

Data sources & Methodology

Data sources used include:

- IHME. Financing Global Health 2018: Countries and Programs in Transition.
- WHO. Global Health Expenditure Database (GHED), extracted December 2019.

Averages:

- Fig. 14 depicts unweighted average, that is the arithmetic mean of countries' shares.

Q6 How does expenditure on immunization correlate with coverage?

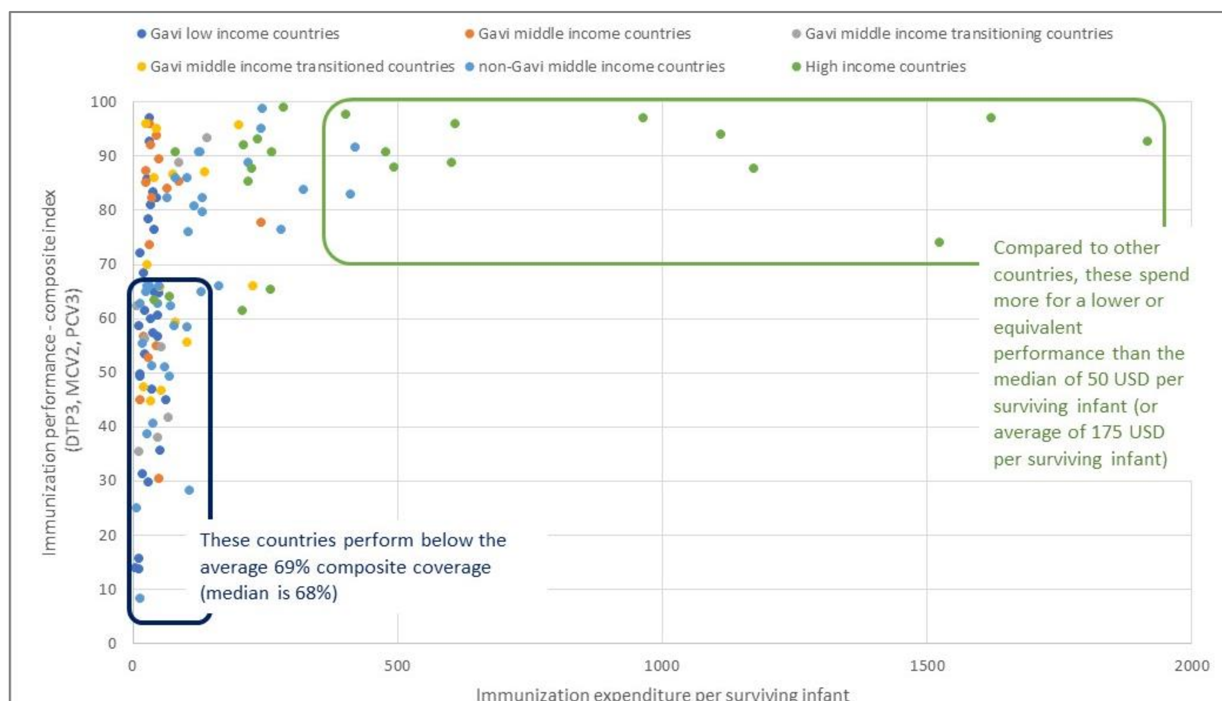
KEY FACTS

- There is no clear and direct relationship between expenditure on immunization and immunization coverage. Some countries are achieving much higher coverage results for the same investment; other countries are investing considerably more but not immunizing a greater percentage of their population.

Analysis

Based on data on immunization expenditure and immunization coverage, there does not seem to be a correlation between higher coverage and higher expenditure per surviving infant (Fig. 15). The composite DTP3, MCV2, and PCV3 is a proxy for traditional and new vaccines, which are used in all countries globally.[24]

Fig. 15. **Immunization expenditure per surviving infant and immunization coverage, 2017 (performance is a composite index measured by the average coverage rate of DTP3, MCV2, and PCV3)**



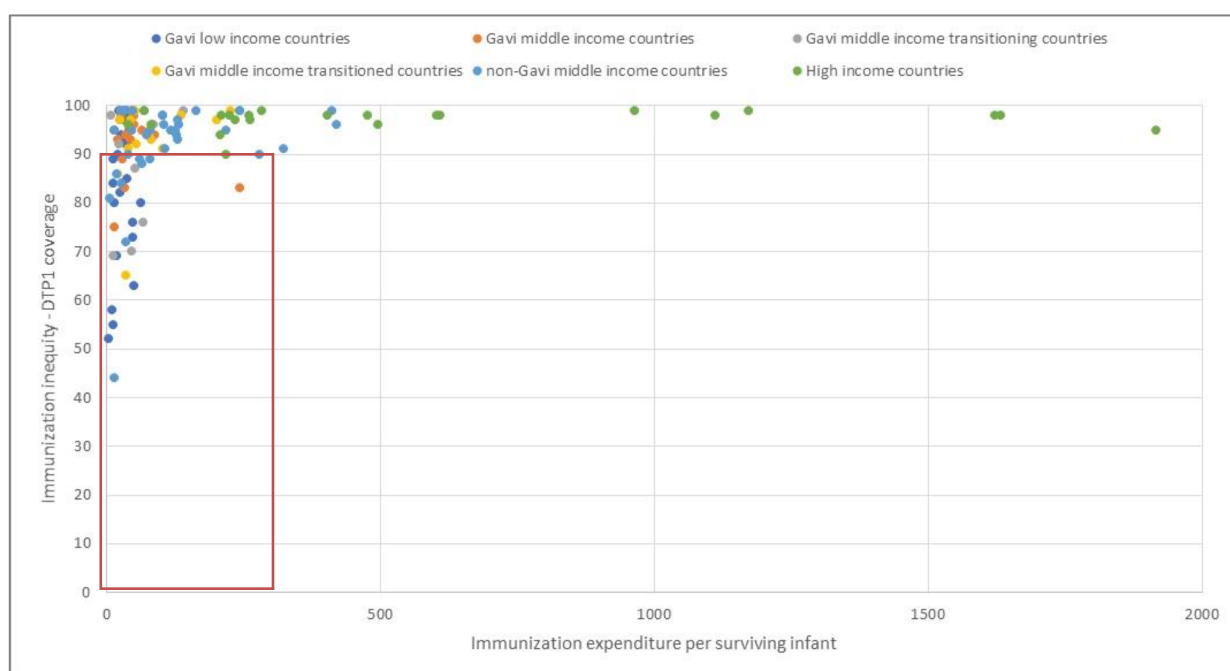
Data sources: WHO/UNICEF Joint Reporting Form (JRF) financing data, UNPOP surviving infant data, WHO/UNICEF WUENIC 2019.
Country groups are determined using Gavi 2019 status.

[24] Performance for this exercise is measured using a composite index of the average coverage ratio for DTP3, PCV3, and MCV2.

There is a lot of variance across countries: some countries spend a lot more than other countries for similar coverage results (e.g., Korea, New Zealand), and some countries struggle to reach average coverage targets for similar expenditure level (e.g., Mali, Lao PDR, Dominican Republic).

There does seem to be an exponential relationship between equity in immunization coverage and immunization expenditure (Fig. 16). Coverage is estimated by using DTP1 as a proxy indicator. Since DTP1 is the first dose of a traditional vaccine included in all routine immunization schedules, if a child does not receive the first dose of DTP, it is a good indication that the child will not be receiving any vaccination. Countries with DTP1 coverage of less than 90% spend less than US$ 250 on immunization per surviving infant. Yet many countries spend less than US$ 250 per surviving infant and have DTP1 coverage above 90%. Low DTP1 coverage is therefore more likely to indicate a country's overall income and inequity level than to show the level of expenditure on immunization.

Fig. 16. **Immunization expenditure per surviving infant and DTP1 coverage, 2017**



Data sources: WHO/UNICEF Joint Reporting Form (JRF) financing data, UNPOP surviving infant data, WHO/UNICEF WUENIC 2019.
Country groups are determined using Gavi 2019 status.

FURTHER AREA FOR RESEARCH

- More analysis and understanding of the immunization program, health system, and financing mechanisms of countries with low spending and high coverage to further investigate opportunities for efficiencies.
- Investigate which financing indicator best correlates to immunization performance, or what expenditure category better predicts coverage level (immunization, primary health care, or overall health)?

Data sources & Methodology

Data sources used include:

- WHO/UNICEF Joint Reporting Form (JRF), published in December 2019. https://www.who.int/immunization/programmes_systems/financing/data_indicators/en/
- UNPD surviving infant.
- Exchange rate, World Bank World Development Indicators, extracted December 2019. https://data.worldbank.org/indicator/PA.NUS.FCRF

Country groups assigned using Gavi 2019 country status when presenting data from any year.