Applying the Global Fund Allocation Formula: Are the Data Driving Allocations?

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Background

- In 2014, the **Global Fund approved a New Funding Model** ('NFM'), in which countries are allocated a total amount of funding for a three-year period based on the NFM's published methodology and data sources. Countries may then submit grant applications for this funding throughout the allocation period.
- The NFM was designed to prioritize funding for countries with the greatest need, improve predictability in funding by transparently communicating three-year allocations to countries, and allow greater flexibility by accepting applications throughout the three-year period.
- The **NFM's methodology for calculating country allocations was published in 2014** and refined for the 2017-2019 allocation period. The methodology includes a quantitatively-measured raw allocation based on economic capacity and disease burden, and the application of qualitative adjustments for contextual indicators including HIV prevalence among key populations (KP).
- As the Global Fund prepares to enter its third allocation period (2020-2022), **we evaluated three research questions**:
  1. Has the NFM made funding amounts more predictable for countries?
  2. Has the NFM improved alignment of funding with disease burden?
  3. Has the NFM made funding more responsive to the needs of key populations, and what is the impact of missing data on funding levels?

Methods

We evaluated published allocations for HIV and TB using data primarily from the Global Fund's API (grant signing, grant performance and absorption), UNAIDS (HIV data), and World Bank (GNI per capita). We assessed three research questions:

1. Has the NFM made funding more predictable for countries?
- We duplicated the published raw allocation methodology (using all metrics for the 2017-2019 allocation period, using data available in 2016.
- We compared the calculated raw allocation with actual allocation amount to assess how predictable, transparent, and replicable the allocation calculations are for countries and stakeholders.

2. Has the NFM improved alignment of funding with disease burden?
- We compared the total amount of funding countries received in the three years prior to the NFM (2010-2012, since no grants were signed in 2013) to the allocation amount 2014-2016.
- We include grants for HIV, TB, and TB/HIV, since we could not separate HIV funding from combined grants.

3. Has the NFM made funding more key population-responsive?
- Beginning in the 2017-2019 allocation period, country allocations are adjusted for HIV prevalence among key populations.
- Using a linear regression model, we measure the association between each of the indicators used in qualitative adjustments on (1) the actual allocation and (2) the magnitude of qualitative adjustments (% difference between calculated raw allocation vs. actual allocation).
- To measure the impact of missing data, we fit a model with a dummy indicator variable for missing data for each of the three KP groups (MSM, SW, PWID)

Results

Has the NFM made funding more predictable for countries?

- Allocations provide countries with formal limits to funding levels, providing some predictability for countries on maximum available funding
- However, 58% of countries received allocations in 2017-2019 **at least 50% higher or lower than in 2014-2016.**
- By linear regression, we find that these period-to-period fluctuations were poorly predicted by the raw calculations
- The difference between the raw calculated amount and the actual amount is likely driven by qualitative adjustments, which totaled on average 68% of the raw allocation amount.
- **Regions with the largest allocation fluctuations 2017-2019 vs. 2014-2016 were those where the raw allocation poorly predicted actual allocation**, likely due to large qualitative adjustments (**Fig. 1**)

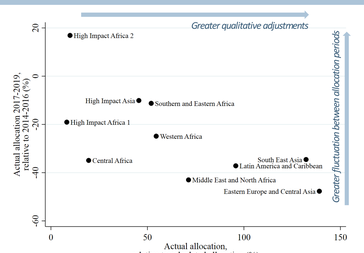
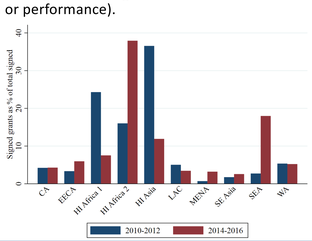


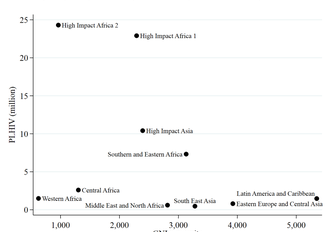
Figure 1. Percent difference in allocation 2017-2019 versus 2014-2016 and the percent difference between the calculated allocation and the actual allocation.

Has the NFM improved alignment of funding with need?

- From 2014-2016, 325 HIV and TB grants were signed, totaling US$13.76B, an increase from 176 ($6.98B) from 2010-2012
- Regionally, proportional funding levels declined in High Impact Africa 1 and High Impact Asia, while increasing in High Impact Africa 2 and Southern and Eastern Africa **(Fig. 2)**
- However, on a country level, **none of the indicators from the allocation methodology are linearly associated (α = 0.05) with the percent change in funding** from 2010-2012 to 2014-2016 (incl. GNI/capita, PLHIV, HIV KP prevalence, ART coverage, or grant absorption or performance).

Figure 2. Signed grants ($USD) as a proportion of total signed grants, by three-year period, (left) and total number of people living with HIV (PLHIV) and GNI per capita, by region (right)





Has the NFM made funding more key population-responsive?

- By univariate analysis, **countries with higher SW HIV prevalence had larger allocations** ($p < 0.001$), but smaller proportional qualitative adjustments ($p = 0.001$). Similarly, higher MSM prevalence was also associated with smaller adjustments ($p = 0.032$) but did not impact allocation. Prevalence in PWID was associated neither with allocation nor adjustments ($\alpha = 0.05$)
- However, KP HIV **prevalence is correlated with several other indicators** in the methodology: number of PLHIV, external HIV spending, domestic HIV spending, reductions in HIV incidence, past allocation, and ART coverage ($|R^2| > 0.25$, $p < 0.05$)
- In addition, UNAIDS **KP HIV prevalence data were not universally available**: SW data were available for 87% of Global Fund recipient countries, MSM 79%, and PWID 45%.
- We fit a multivariate linear model with all indicators used in qualitative adjustments and that controls for KP prevalence data missingness **(Table 1).**
- **KP data missingness is not statistically associated with allocation amount or qualitative adjustments.** HIV prevalence among PWID, but not SW or MSM, is associated with higher allocation.
- Qualitative adjustments were larger in countries with lower MSM prevalence, and were not associated with HIV prevalence in SW or PWID.
- Overall, the allocation methodology was **dominated by the amount allocated in the previous round** ($R^2 = 0.83$).

Indicator	Allocation ($US)		Qualitative adjustment (%)		Qualitative adjustment ($US)	
	β	*p*-value	β	*p*-value	β	*p*-value
Country economic capacity	$2,824,219	0.6601				
PLHIV	$30,202,958	0.2548				
Allocation, 2014-2016	$51,229,005	< 0.001				
External spending	$15,282,778	0.2297				
Domestic spending	-$24,691,654	0.1758	-4.22	0.0949	-$44,968,007	< 0.001
Incidence change, 2011-2014	-$5,948,902	0.3243	8.18	0.3587	$2,371,200	0.6601
ART coverage	$4,209,838	0.6191	-14.12	0.1411	$5,542,044	0.3386
Grant performance rating	-$8,628,144	0.0958	-16.78	0.0387	-$3,343,067	0.4910
Grant absorption	-$4,956,189	0.3621	9.14	0.2720	$1,067,843	0.8316
MSM HIV prevalence	$324,697	0.9648	-35.09	0.0041	-$2,682,818	0.7092
SW HIV prevalence	$8,180,296	0.2424	-5.70	0.5877	$11,045,989	0.0859
PWID HIV prevalence	$16,847,357	0.0492	-19.24	0.1697	$16,130,386	0.0591
MSM data (1=have data)	-$10,068,877	0.5183	40.34	0.0833	$3,953,514	0.7772
SW data (1=have data)	-$103,429	0.9962	2.26	0.9356	$29,817,180	0.0824
PWID data (1=have data)	$5,142,712	0.6837	-21.96	0.2553	$2,575,653	0.8251

Table 1. Linear regression model of indicators used in allocation methodology on (A) total allocation, (B) qualitative adjustments as a percent of calculated allocation (calculated vs. actual allocation), and (C) amount of qualitative adjustments (actual – calculated). Indicators are linearly transformed (z-scores) to allow cross-indicator comparisons, where β corresponds to a one standard deviation difference. †Note that country economic capacity, PLHIV, allocation 2014-2016, and external spending are the component indicators used to calculate the calculated allocation.

Conclusions

1. **Predictability of funding levels is limited by lack of transparency in allocation methodology.** The published allocation methodology can be duplicated using public data, but in some regions the large magnitude of qualitative adjustments prevents an accurate prediction of allocation levels.
2. **The NFM has shifted funding between countries and regions, yet this is not clearly driven by epidemiology or need according to the NFM's own methodology.** We find large shifts in funding between countries and regions, but no metric used in the published allocation methodology is associated with these shifts.
3. **The impact of KP prevalence data on allocation is unclear.** Higher PWID prevalence is associated with larger allocations, but higher MSM prevalence is correlated with smaller proportional qualitative adjustments. After controlling for other indicators, SW prevalence is not correlated with allocation or qualitative adjustments.
4. **Missing data does not impact allocation.** The availability of KP prevalence data is not statistically associated with allocation or adjustments, suggesting inconsistent use in methodology or the use of non-UNAIDS data sources.

Greater transparency about the methodology and, in particular, uses and sources of KP prevalence data will improve predictability, transparency, and alignment with need.

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