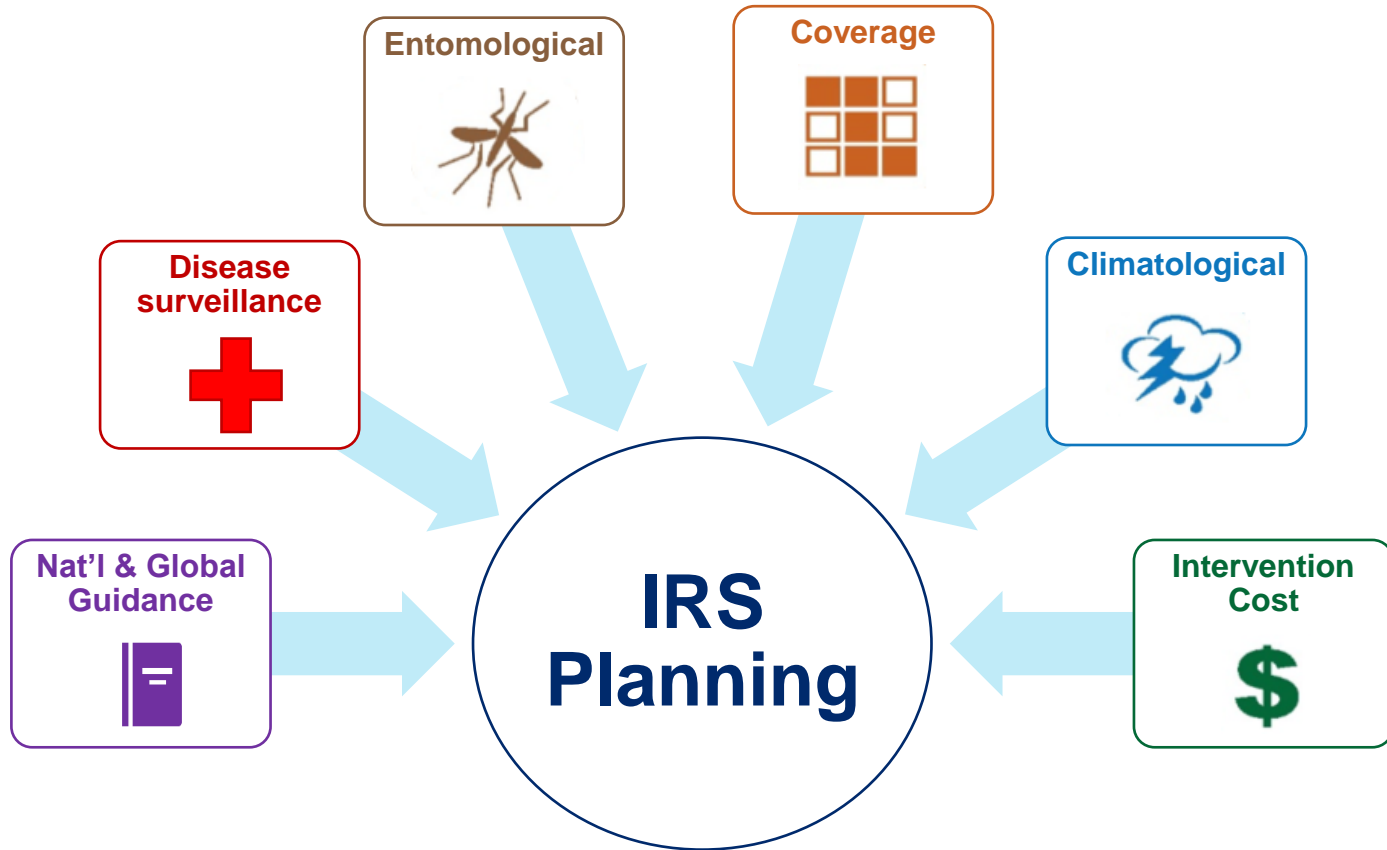# RBM Partnership
To End Malaria

29 January 2019

# Increasing the use of data in IRS decision making

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PMI VectorLink Project

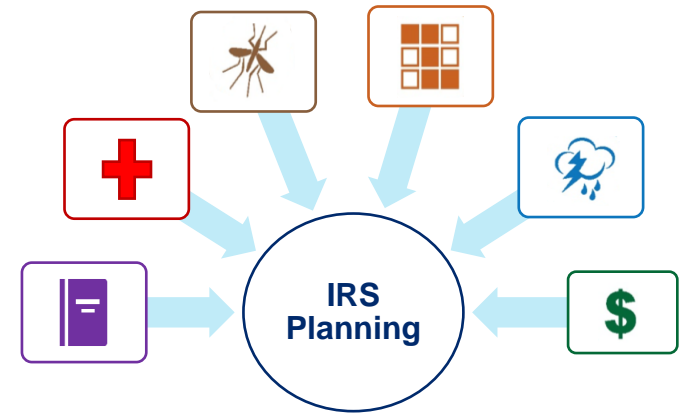# Data use for IRS decision making

Key questions for national-level planning

1. Where do vector control intervention coverage gaps persist?

2. Are there geographic areas of persistently high malaria burden, despite high vector control coverage?

3. What is the level of insecticide resistance by geographic site?

4. Where should next generation LLINs and insecticides for IRS be deployed?

5. What is the epidemiological impact of vector control interventions, including LLINs and IRS?

IRS Planning
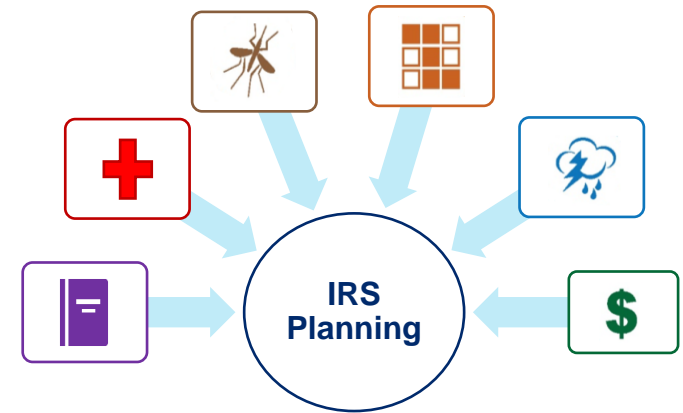
Barriers to data use

1. Data are often not easily accessible and readily available to decision makers, including:
   a. Trend data from the HMIS
   b. Entomological data
   c. Vector control coverage data
   d. Climatological data

2. Reports may not summarize data to the granular levels optimal for planning, stratification, and targeting (i.e. the district or sub-district/health facility catchment level)

3. Data are often not easily digestible and actionable

PMI VectorLink Vision of Success

Entomological

Coverage

Disease surveillance

Climatological

Nat'l & Global Guidance

National-level planning

Intervention Cost
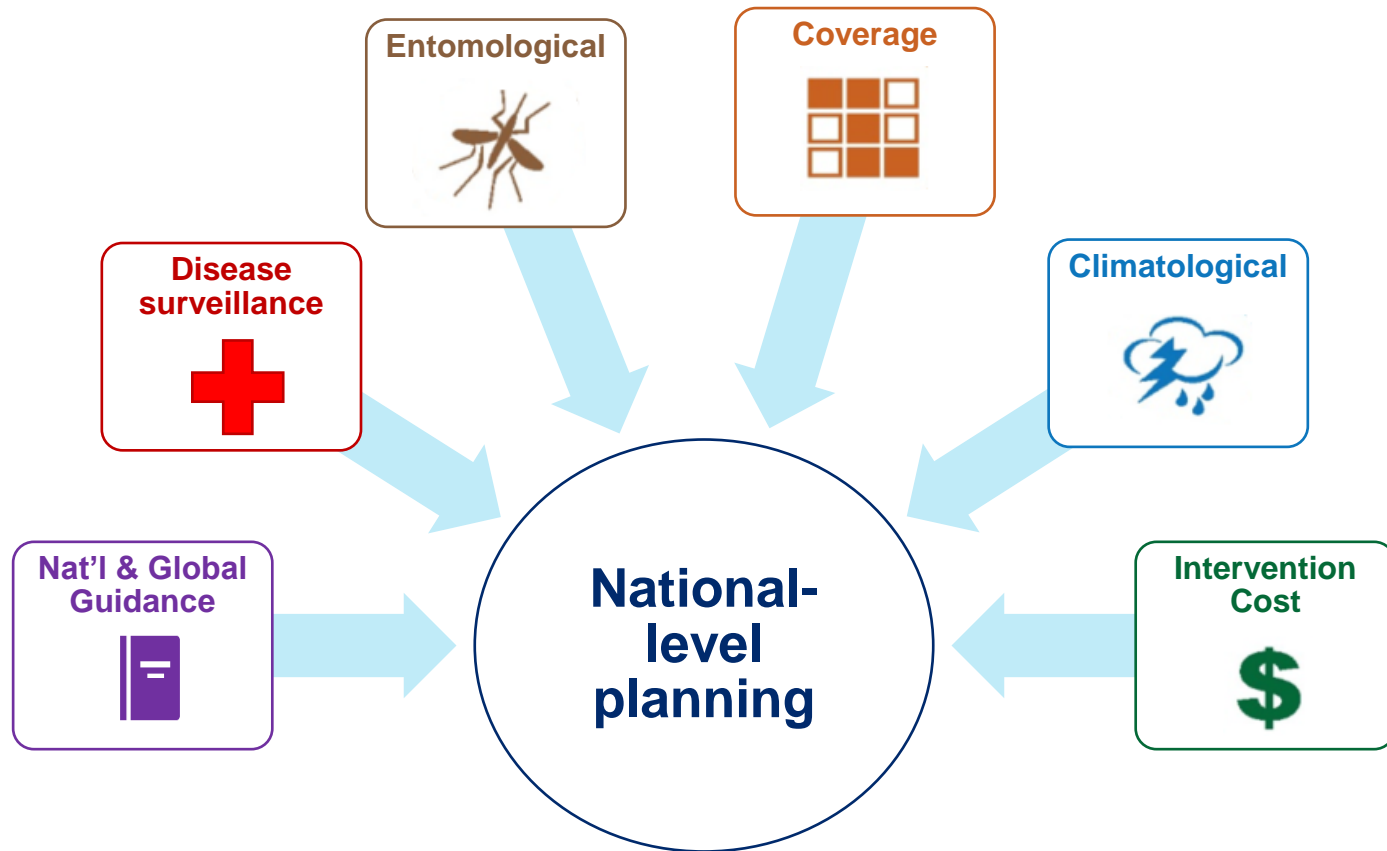
Analysis that is: Timely Digestible Action-oriented

PMI VectorLink support

1. Stakeholder engagement to identify key questions and existing datasets

2. Access, prepare, and analyze datasets

3. Develop and revise visualizations

4. Use final visualizations to facilitate data review meetings for decision-making

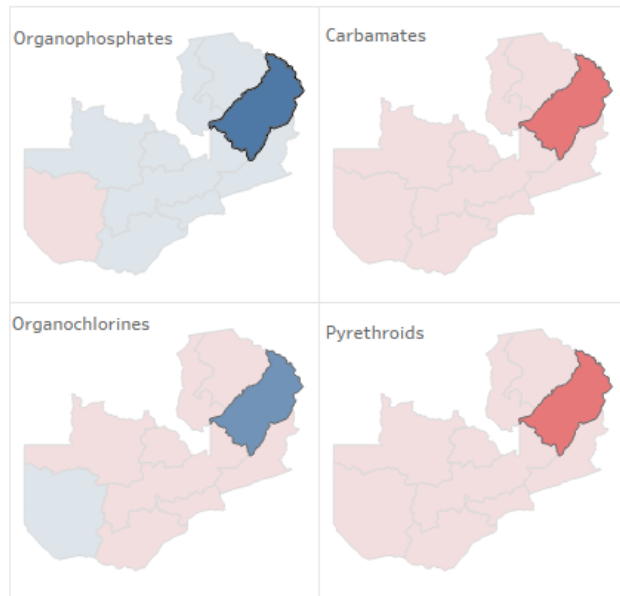5. Build capacity in data review and visualization

Insecticide choice and rotation for IRS

Product Choice Dashboard - Provincial Level

Susceptibility Status: ■ Resistant ■ Susceptible

Insecticide Susceptibility, Chemical Class

Organophosphates

Carbamates

Organochlorines

Pyrethroids

Insecticide Susceptibility Detail - Organophosphates: Muchinga

	District	Site	Chemical	Species	Susceptibility
2017	Isoka	Namyala	Pirimiphos-Methyl	An. gambiae s.l.	100%
		Nsalamba	Pirimiphos-Methyl	An. funestus s.l.	100%
2016	Isoka	Chilanga	Pirimiphos-Methyl	An. gambiae s.l.	100%
		Londamaka	Pirimiphos-Methyl	An. gambiae s.l.	100%
		Nsalamba	Pirimiphos-Methyl	An. funestus s.l.	100%
				An. gambiae s.l.	100%
	Chinsali	Mikuwe	Pirimiphos-Methyl	An. funestus s.l.	100%
				An. gambiae s.l.	100%
2014	Isoka	Kampumbu	Pirimiphos-Methyl	An. funestus s.l.	100%
		Malekani	Pirimiphos-Methyl	An. funestus s.l.	100%
				An. gambiae s.l.	100%
2012	Mpika	Mpika	Pirimiphos-Methyl	An. funestus s.l.	100%
				An. gambiae s.l.	100%

Product History: Muchinga

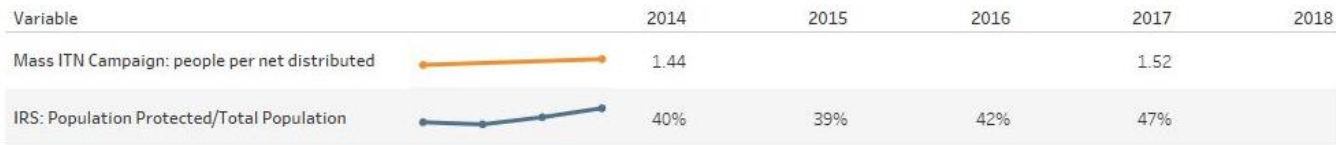| Year ..	ITNs	IRS
2017	Pyrethroids Deltamethrin DawaPlus 2.0	Organophosphates Pirimiphos-Methyl Actellic 300CS
2016	No nets distributed	Organophosphates Pirimiphos-Methyl Actellic 300CS
2015	No nets distributed	Organophosphates Pirimiphos-Methyl Actellic 300CS
2014	Pyrethroids Permethrin Olyset	Organophosphates Pirimiphos-Methyl Actellic 300CS

IRS Months over 80% efficacy: Muchinga

Year ..	Cement	Mud
2017	5	6
2016	7	5
2015	5	5
2014	8	7

Improving vector control coverage (IRS & LLIN)

National Vector Control Coverage

Variable		2014	2015	2016	2017	2018
Mass ITN Campaign: people per net distributed		1.44			1.52	
IRS: Population Protected/Total Population		40%	39%	42%	47%	

Province Vector Control Coverage: ITNs and IRS

Year 2017 ▼

Values or Meeting Target Show Meeting Target ▼

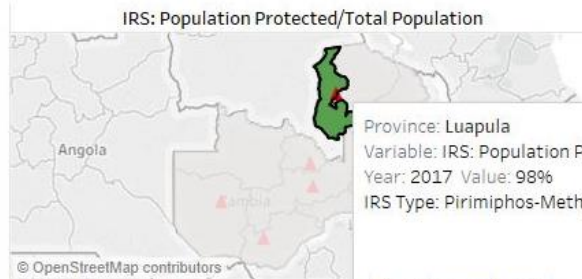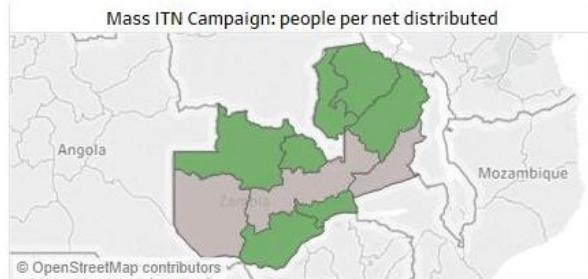| Province	Mass ITN Campaign: people per net distributed	IRS: Population Protected/Total Population
Central	1.82	▲ 41%
Copperbelt	1.51	▲ 63%
Eastern	1.85	47%
Luapula	1.06	▲ 98%
Lusaka	1.79	23%
Muchinga	1.29	48%
North Western	1.48	47%
Northern	1.43	49%
Southern	1.42	▲ 37%
Western	1.88	▲ 52%
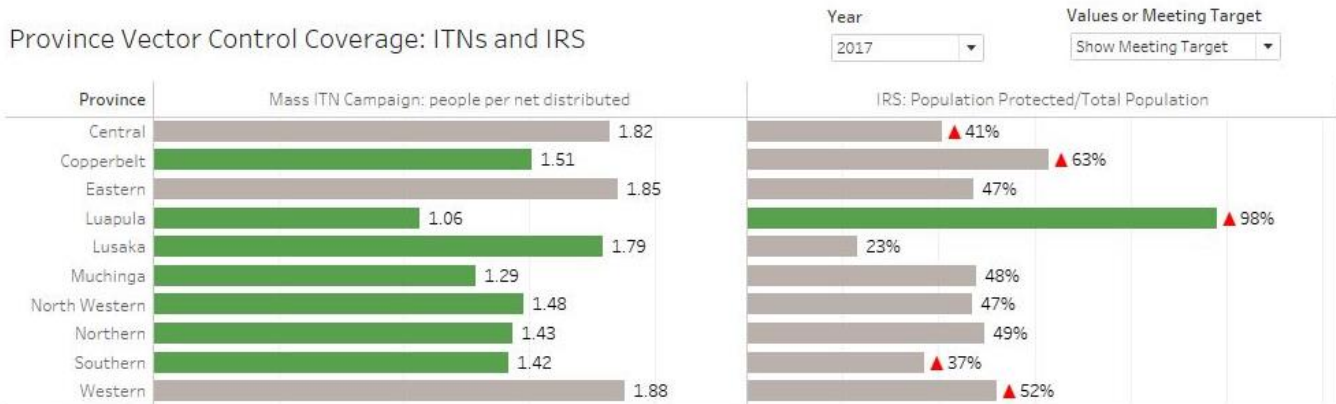
▲ Indicates province contains district with values over 100%

Targets:

ITN:
1.8 people per net (or lower)

IRS:
80% of the population protected (or higher)

Mass ITN Campaign: people per net distributed

Angola
Mozambique
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IRS: Population Protected/Total Population

Angola
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Province: Luapula
Variable: IRS: Population Protected/Total Population
Year: 2017 Value: 98%
IRS Type: Pirimiphos-Methyl, Organophosphates, WHO Prequalified

	Luapula			
	2014	2015	2016	2017
People per net (Mass)	1.16			1.06
% HH ≥ 1 ITN	87%			84%
% HH ≥ 1 ITN per 2 people				58%
% HH members slept under ITN	65%			74%
% Population Protected by IRS	44%	76%	81%	98%
% HH with IRS last 12 months	32%			62%
% HH with ≥ 1 ITN or IRS	91%			90%

Year Key: 2014: MIS 2015, Mass Net campaign 2014, IRS campaign 2014-2015; 2015: IRS campaign 2015-2016; 2016: IRS campaign 2016-2017; 2017: MIS 2018, Mass ITN campaign 2017-2018, IRS campaign 2017-2018

Data Sources: Mass ITN: NMCP Net Distribution Data (some data from distribution later in the 2017-2018 campaign may not be included)
IRS Population protected: Govt, VL and MACEPA IRS Data; Total Population: HMIS CSO Population
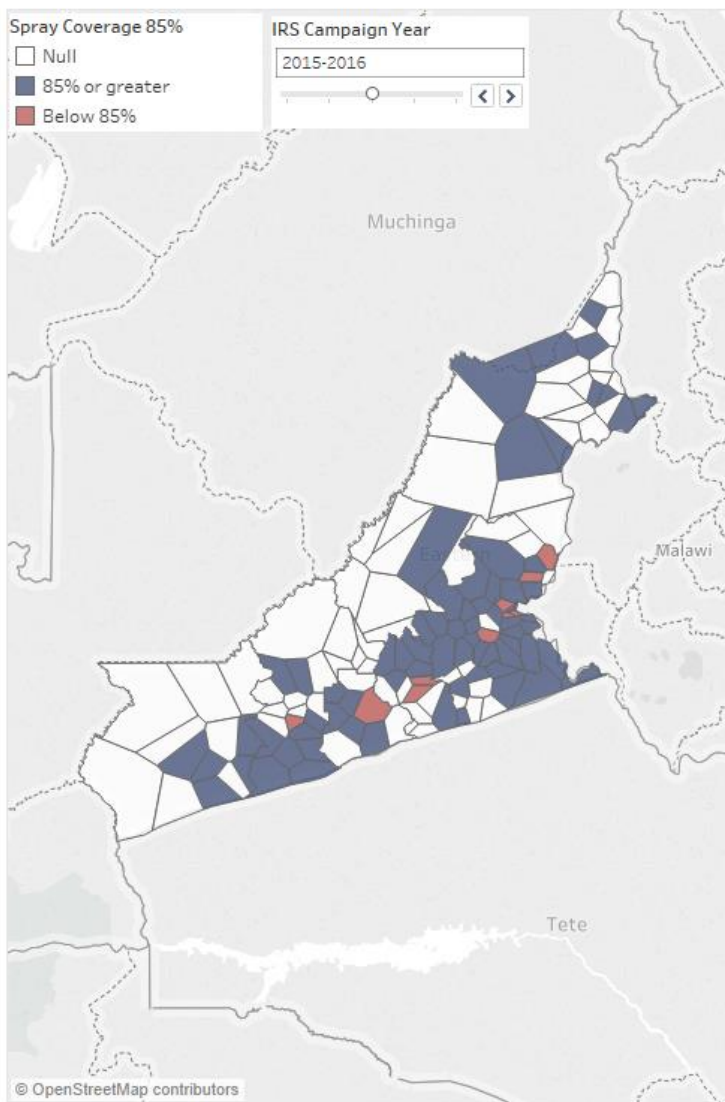
Improving IRS coverage

Eastern HFCA Spray Coverage

Spray Coverage 85%
- ☐ Null
- 85% or greater
- Below 85%

IRS Campaign Year
2015-2016

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Eastern HFCA Spray Coverage Table

District	Facility	IRS Campaign Year		
		2014-2015	2015-2016	2016-2017
Chipata	Gondar UHC	100%	81%	
	Lunkwakwa UHC	100%	58%	96%
	Mchini HC	100%	75%	
	Namseche RHC	100%	85%	71%
	Jerusalem RHC	99%	97%	97%
	Kamulaza RHC	99%	91%	99%
	Kayeka HP	99%	90%	
	Kwenje RHC	99%	99%	
	Samuel RHC	99%	99%	
	Eastern Command	98%	55%	96%
	Mafuta RHC	97%	91%	100%
	Chiwoko RHC	96%	100%	
	Msekera RHC	96%	88%	96%
	Kasenengwa RHC	95%	92%	96%
	Magwero RHC	95%	94%	
	Chizenje RHC	94%	97%	
	Kapata UHC	94%	55%	94%
	Katandala RHC	94%	93%	85%
	Madzimoyo RHC	94%		92%
	Vizenge RHC	94%	84%	79%
	Champhande RHC	93%	94%	99%
	Chinyaku HP	93%	96%	92%
	Makwe HP	93%	98%	
	Mwami RHC	93%	96%	91%
	Mnukwa RHC	91%	93%	94%
	Mshawa RHC	91%	90%	97%
	Mkanda RHC	90%	89%	86%
	Rukuzye RHC	90%	86%	66%
	Chikando RHC	88%	95%	96%
	Chipata GH	88%		
	Kapara RHC	88%	96%	92%
	Muzeyi RHC	88%	89%	98%
	Chipungo RHC	86%	83%	93%
	Chiparamba RHC	85%	93%	96%
	Madzimawe RHC	85%	87%	93%

Addressing coverage in high burden and high risk areas

Eastern Province: Prioritize HFCAs - 2017

District	Facility	Rank	Case Incidence	Malaria Cases	Population	IRS Population Protected	IRS: Sprayed out of Found
Chipata	Muzeyi RHC	1	498	15,097	30,302	78%	98%
Chipata	Gondar UHC	2	820	12,078	14,736	21%	94%
Chipata	Mnukwa RHC	3	1,621	11,131	6,867		
Chipata	Mbenjele HP	4	1,313	10,685	8,137	0%	100%
Chipata	Mnoro RHC	5	970	9,722	10,022	160%	93%
Chipata	Chiparamba RHC	6	918	8,633	9,403	135%	92%
Chipata	Namseche RHC	7	310	8,186	26,381	69%	97%
Chipata	Tamanda RHC	8	883	7,995	9,050	99%	95%
Chipata	Mafuta RHC	9	795	7,189	9,039	123%	93%
Chipata	Kasenga RHC	10	1,312	7,182	5,475	159%	95%
Chipata	Dwankhozi RHC	11	1,887	6,396	3,389	3%	100%
Chipata	Mshawa RHC	12	613	6,134	10,005	275%	94%
Chipata	Chinunda RHC	13	544	5,969	10,982	95%	93%
Chipata	Madzimoyo RHC	14	1,497	5,808	3,879	123%	91%
Chipata	Chinyaku HP	15	1,234	5,670	4,594	58%	92%
Chipata	Chipangali RHC	16	1,104	5,591	5,066	27%	96%
Chipata	Kapara RHC	17	366	5,423	14,802		
Chipata	Chakoloma HP	18	1,641	5,209	3,175		
Chipata	Eastern Command Mili...	19	501	5,166	10,317	53%	93%
Chipata	Lunkwakwa UHC	20	611	4,992	8,175	67%	92%
Chipata	Katandala RHC	21	1,110	4,961	4,470	136%	93%
Chipata	Kapata UHC	22	129	4,945	38,192	56%	97%

Choose District(s)

- ☐ (All)
- ☐ Null
- ☐ Chadiza
- ☑ Chipata
- ☐ Katete
- ☐ Lundazi
- ☐ Mambwe
- ☐ Nyimba
- ☐ Petauke
- ☐ Sinda
- ☐ Vubwi

Year of Period

2017

Sort by

- ○ Case Incidence
- ◉ Malaria Cases
- ○ Population
- ○ IRS Population Protected
- ○ Sprayed out of Found

Accomplishments & next steps

Accomplishments mid-2018 through early 2019

- Stakeholder engagement (Zambia)

- Dashboard development (Zambia)

- Initial stakeholder engagement in Ethiopia, Nigeria, and Mali

  - National data review

  - Evaluation of IRS, next generation LLINs

Next steps in 2019

- Complete Zambia dashboards

- Facilitate a data review workshop (Zambia)

- Develop a vector control data use case study (Zambia)

- Continue stakeholder engagement in new countries

Questions

Thank you: Sarah Burnett & Jonathan Drummey, PATH
Contact: Megan Littrell at mlittrell@path.org

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Project challenges

1. Diverse set of target users and use cases: multiple stakeholders for IRS decision-making

2. Tracking down all relevant data, particularly older datasets
    a. Source datasets are sometimes not available (reports the only source of data)

3. Data quality issues
    a. Final reports that do not match source datasets
    b. >100% coverage
    c. Outliers & missing data

4. Merging using administrative unit names that do not match across files

5. Change in number of administrative units and administrative boundaries over time (new health facilities, districts, closed facilities)

6. Defining administrative boundaries, multiple administrative boundaries

7. Population estimates and structure counts