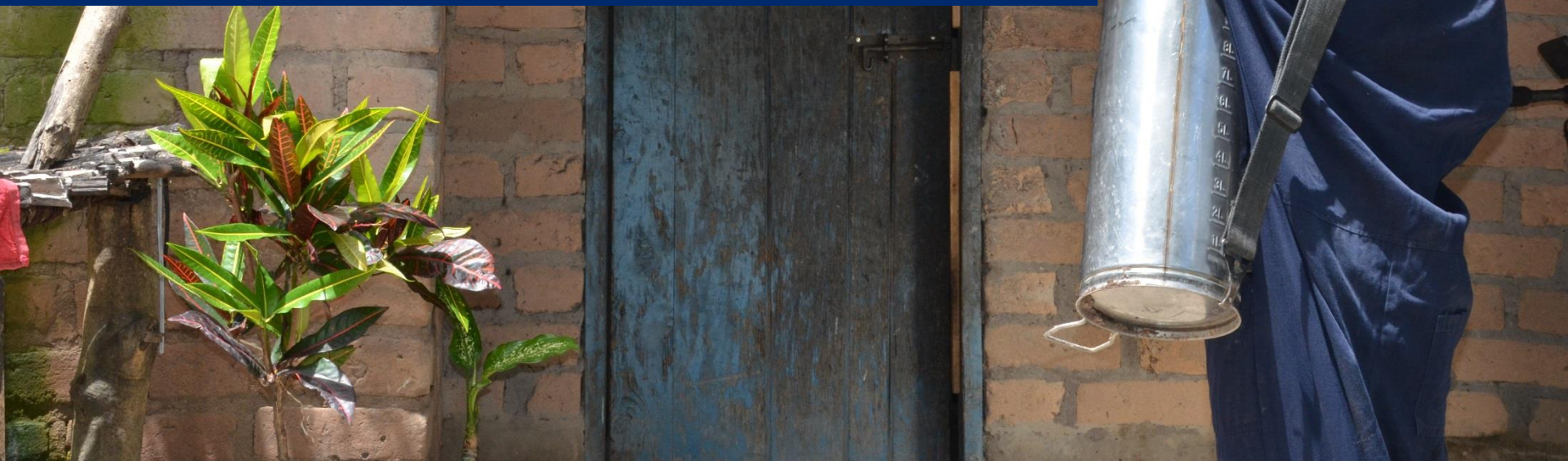


# Leveraging routine data for vector control decision-making: country-specific examples

Sarah Burnett  
3 February 2020



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# Data use for vector control decision making

## Key Questions

1. What insecticides should we use for IRS and ITNs?
2. Where should next generation ITNs and insecticides for IRS be deployed?
3. What is the epidemiological impact of vector control interventions, including ITNs and IRS?

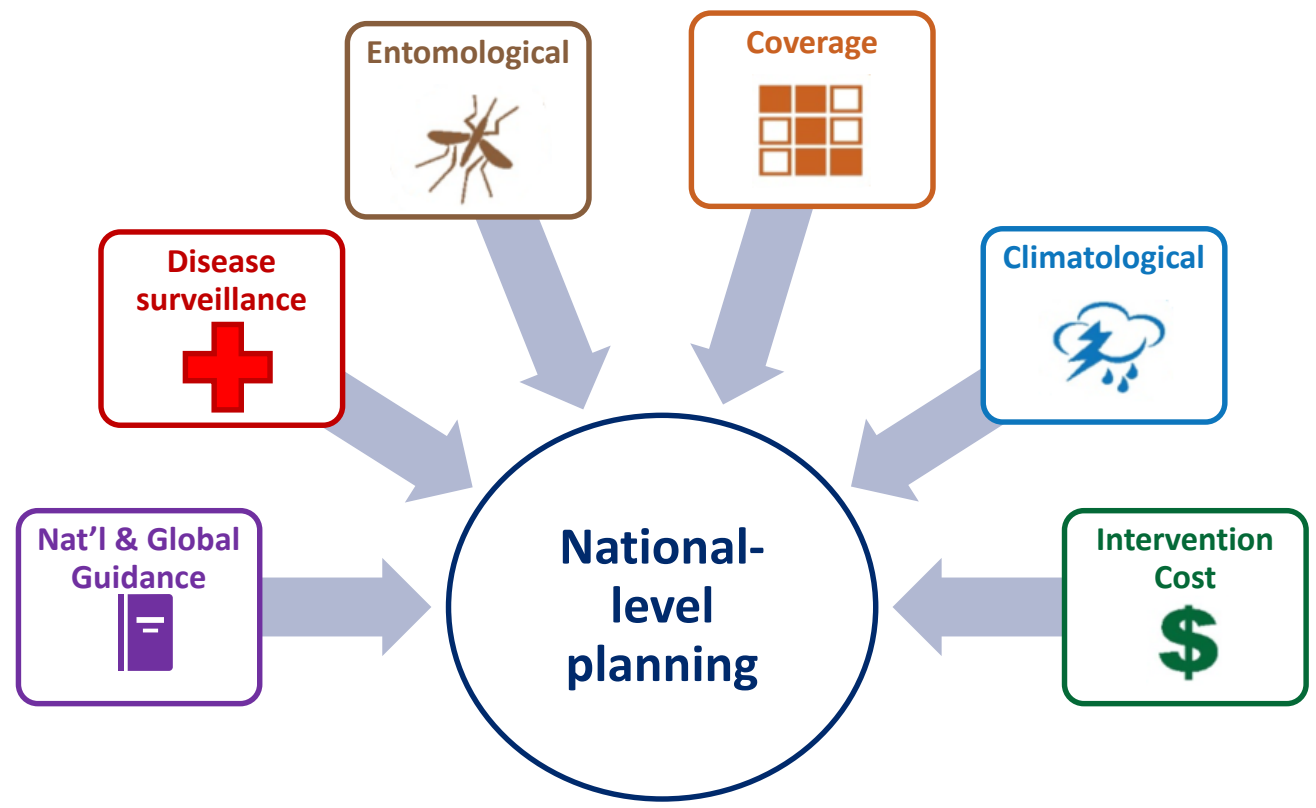
## Barriers to Data Use

Data is often not:

1. Easily accessible
2. Summarized at the required levels
3. Easily digestible and actionable



# Data use for vector control decision making



Analysis that is:  Timely  Digestible  Action-oriented



# Case Study: IRS Product Choice in Zambia

## Context

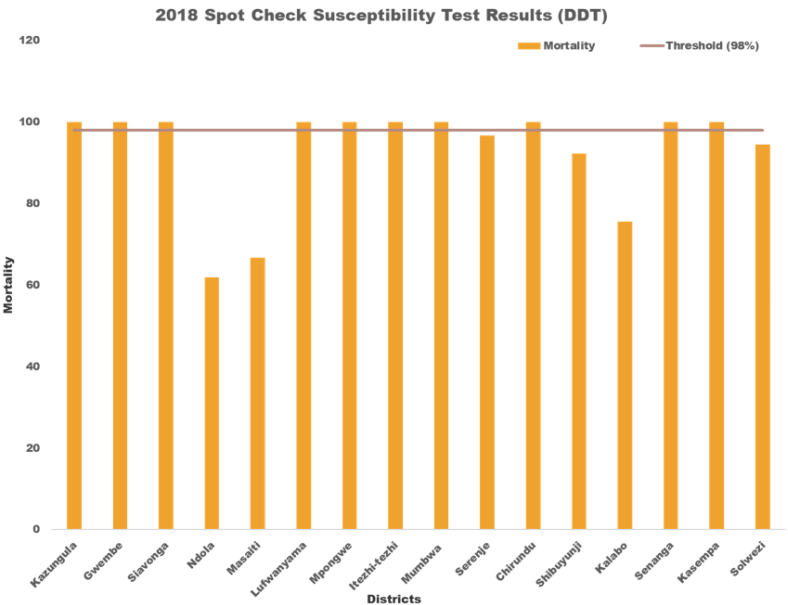
- Each district receives IRS every year
- The Technical Advisory Committee must recommend IRS products for use
- 5 main partners that collect relevant entomological data



# Case Study: IRS Product Choice in Zambia

## Insecticide Susceptibility in Southern Zambia, 2017

Mosquito species	Study area	Insecticide	Number of mosquitoes tested	Number of mosquitoes dead	Mortality (%)
Anopheles <i>funestus</i> s.l	Manchanwa	Deltamethrin	26	25	96.2
		Bendiocarb	29	25	86.2
Anopheles gambiae s.l	Sikaneka	DDT	38	38	100
		Pirimiphos methyl	62	62	100
		Bendiocarb	45	45	100
		Deltamethrin	21	21	100
Anopheles gambiae s.l	Buleyamalima	DDT	46	46	100
		Pirimiphos methyl	50	50	100
		Bendiocarb	45	45	100
		Deltamethrin	26	26	100
Anopheles gambiae s.l	Sinafala	DDT	80	80	100
		Pirimiphos methyl	64	64	100
		Bendiocarb	28	28	100
		Deltamethrin	30	30	100



### Insecticide susceptibility summary table *An. funestus* s.l.

<i>An. funestus</i> s.l.	Muchinga	Northern	Eastern	Luapula	Central
DDT	N/A	N/A	N/A	Susceptible	Susceptible
Pirimiphos-methyl	Susceptible	Susceptible	Susceptible	Susceptible	Susceptible
Deltamethrin	N/A	N/A	Resistance	Resistance	Resistance
Bendiocarb	N/A	Susceptible	N/A	Probable	Resistance
Clothianidin	Susceptible	Susceptible	N/A	Susceptible	N/A

## Nchelenge resistance data 2018 - *Anopheles funestus*

Insecticide	Resistant	Susceptible	Total	% mortality
Pirimiphos-Methyl	0	143	143	100
Permethrin	74	44	118	37.29
Deltamethrin	40	89	129	68.99
DDT	0	117	117	100
Propoxur	56	47	103	45.63
5x Deltamethrin	27	99	126	78.57
10x Deltamethrin	19	91	110	82.73
5x Permethrin	12	100	112	89.29
10x Permethrin	3	102	105	97.14



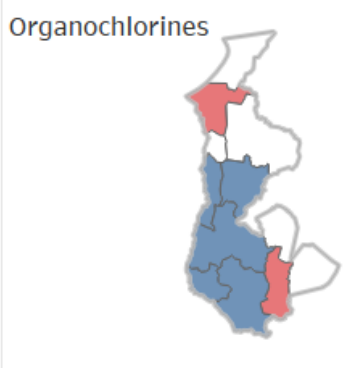
# Case Study: IRS Product Choice in Zambia

All Insecticide Susceptibility Samples by Site, Species and Chemical

All Samples

Province	Chemical Class	Year	Chemical	District	Site	An. funestus s.l.	An. gambiae s.l.		
Luapula	Organochlorines	2019	DDT	Chembe	Chembe	100% (113)			
				Chiengwe	Chiengi		64% (61)		
				Chipili	Chebele	100% (35)	92% (63)		
					Chipili	100% (11)	44% (9)		
				Kawambwa	Kawambwa		78% (32)		
				Milenge	Lunga	100% (35)			
					Miyambo	100% (218)	100% (4)		
				Mwense	Shibesa	100% (42)	100% (45)		
				Nchelenge	Manchene	92% (125)	60% (10)		
					Nchelenge	100% (135)	52% (100)		
				Samfya	Samfya	97% (75)			
				2018	DDT	Nchelenge	Nchelenge	100% (117)	20% (15)

Susceptibility Status  
■ Resistant (<98%)  
■ Susceptible (>=98%)



Choose Province(s)

- (All)
- Central
- Copperbelt
- Eastern
- Luapula
- Lusaka
- Muchinga
- North Western
- Northern
- Southern
- Western

Choose Chemical Class(es)

- (All)
- Carbamates
- Neonicotinoids
- Organochlorines
- Organophosphates
- Pyrethroids
- Pyrroles

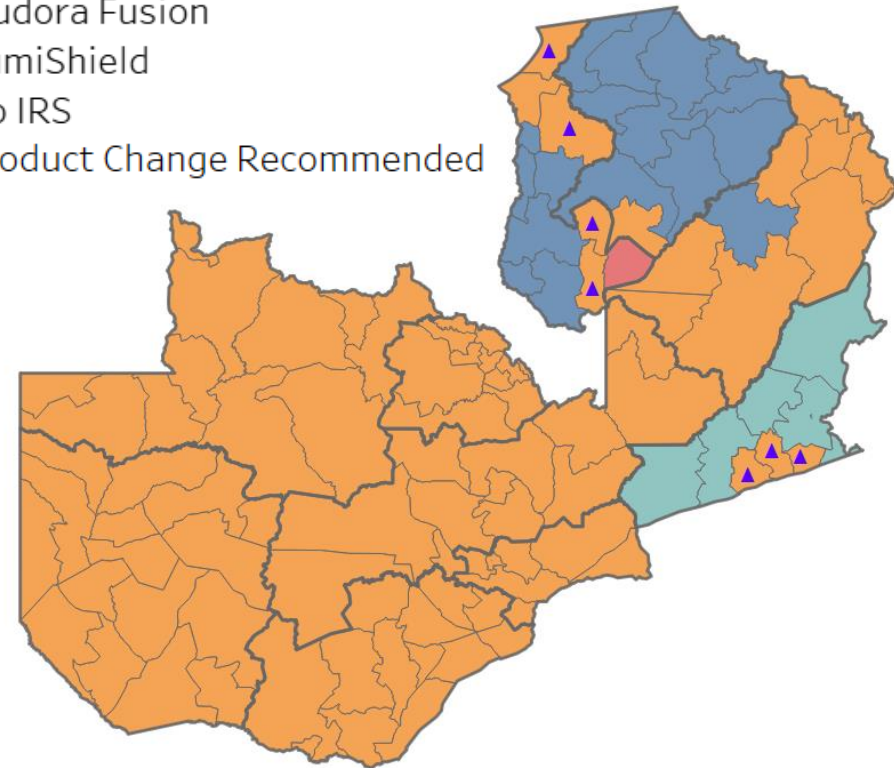
Choose Year(s)

# Case Study: IRS Product Choice in Zambia

- First time data was integrated
- Decisions informed by the national guidance & data
- Documented decision-making process

## IRS Products

- DDT
- Fludora Fusion
- SumiShield
- No IRS
- ▲ Product Change Recommended





# Case Study: New Net Prioritization in Mali

## Context:

- The NMCP wanted to prioritize a region and districts within a region for IG2 ITN distribution based on the highest malaria burden

- First, we created a visual summarizing malaria case incidence and prevalence at the region level

Region		Cas de paludisme pour 1000 habitants (2018)	EDSM (2018): Prévalence du paludisme chez les enfants
Sikasso	1	170.2	29.7%
Ségou	2	146.6	25.9%
Koulikoro	3	144.6	21.7%
Kayes	4	94.1	12.6%
Bamako	5	91.8	0.9%
Gao	6	91.3	15.3%
Mopti	7	83.4	24.9%
Tombouctou	8	66.8	2.9%
Menaka	9	65.9	
Taoudenit	10	17.7	
Kidal	11	16.0	1.6%

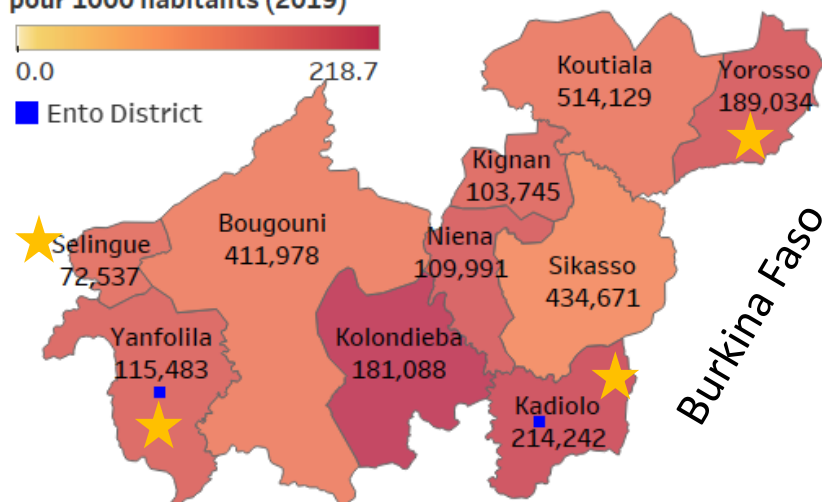


**Districts**, par MILD quantité estimée et Incidence des cas, 2019

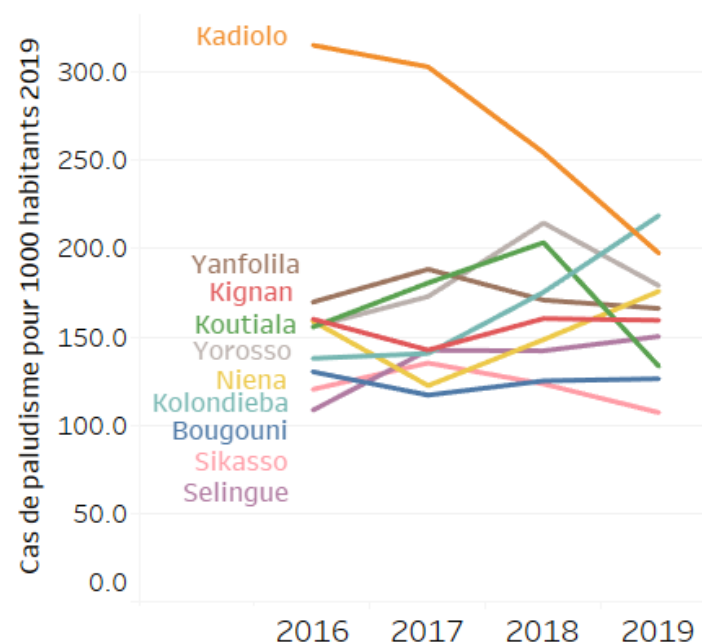
Cas de paludisme pour 1000 habitants (2019)



Ento District



Incidence des cas par District et Année



Cas de paludisme pour 1000 habitants, MILD quantité estimée, et population estimée

District	Cas de paludisme pour 1000 habitants 2019	DHIS2/DNP Population estimée 2021	MILD quantité estimée DHIS2/DNP 2021	Somme cumulé(e) de MILD quantité estimée DHIS2/DNP 2021
Kadiolo	197.4	350,577	214,242	214,242
Yorosso	179.0	309,328	189,034	403,276
Yanfolila	166.1	188,972	115,483	518,758
Selingue	150.3	118,696	72,537	591,295
Kolondieba	218.7	296,326	181,088	772,383
Nièna	175.8	179,985	109,991	882,374
Kignan	159.4	169,765	103,745	986,119
Koutiala	133.3	841,301	514,129	1,500,248
Bougouni	126.3	674,146	411,978	1,912,226
Sikasso	107.1	711,281	434,671	2,346,897
<b>Grand Total</b>	<b>1,613.5</b>	<b>3,840,378</b>	<b>2,346,897</b>	<b>2,346,897</b>



# Accomplishments & Next Steps

## **Accomplishments:**

1. Supporting NMCPs in 7 countries to leverage their own existing data for vector control program planning and evaluation
2. Documenting indicators & analyses in best practices guide

## **Next Steps:**

1. Conduct evaluations of IRS and next generation ITNs using routine data
2. Continue to document and share best practices
3. Develop vector control data use case studies



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Questions?



Thank you: NMEP Vector Control Unit, Zambia  
NMCP, Mali  
PMI VectorLink Staff & Partners  
Megan Littrell & Jonathan Drummey, PATH  
Contact: Sarah Burnett at [sburnett@path.org](mailto:sburnett@path.org)



# Countries and Areas of Support

Country	IRS Evaluation	ITN Monitoring	Program Planning Dashboards
Cote d'Ivoire	<b>x</b>		
Ethiopia	<b>x</b>		
Liberia		<b>x</b>	
Madagascar	<b>x</b>		
Mali	<b>x</b>	<b>x</b>	<b>x</b>
Nigeria		<b>x</b>	
Zambia			<b>x</b>