ACTwatch

Evidence for Malaria Medicine Policy

Antimalarial drugs and diagnostic testing in the era of subsidies: multi-country findings

Stephen Poyer and Benjamin Palafox, on behalf of the ACTwatch Group

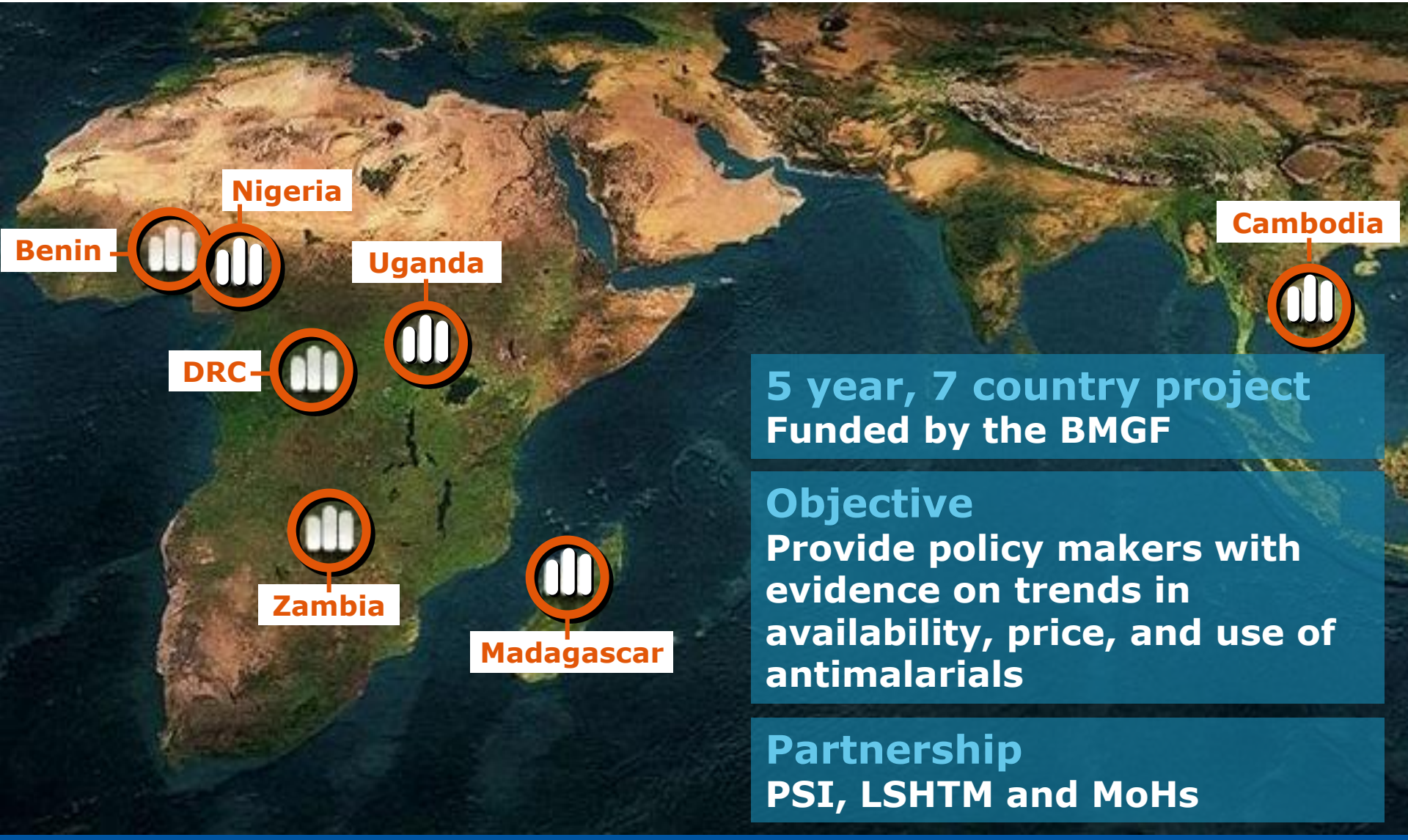
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LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

Presentation outline

- Overview of ACTwatch and methods
- Overview of multi-country results
- Country examples
  - Nigeria
  - Cambodia
- The future

ACTwatch: the original 7 countries



5 year, 7 country project
Funded by the BMGF

Objective
Provide policy makers with evidence on trends in availability, price, and use of antimalarials

Partnership
PSI, LSHTM and MoHs

3 Research components provide a comprehensive picture of the market



Outlet Survey (PSI)

What are the trends in the availability, market share and price of antimalarials?
- Trend data over the life of project



Household Survey (PSI)

What are the trends in the levels of use of different antimalarials. What are the determinants of use?
- Twice over the life of project (baseline and endline)



Supply Chain Research (LSHTM)

How is the private distribution chain structured? Wholesaler & market characteristics, mark-ups?
- Once over life of project

Outlet survey methods



- Clusters randomly selected proportional to population size
- Census of all outlets with the potential to stock antimalarials
- Over-sampling of public health facilities and pharmacies
- Audit of all antimalarials in stock:
  - generic name - brand name – formulation – strength - expiry date – price - volume (quantity) dispensed in the last 7 days
- Availability of diagnostic testing captured (RDT/microscopy)
- Data survey set and weighted to provide nationally representative estimates

Household survey methods

- Cross-sectional household surveys
- Stratified multi-stage cluster samples
- Households nested within clusters selected for the outlet surveys
- Households with at least 1 child under 5 with fever in the last 2 weeks



- Caregivers of all eligible children invited to participate
- Data survey set and weighted for national estimates

Supply chain: Quantitative survey methods

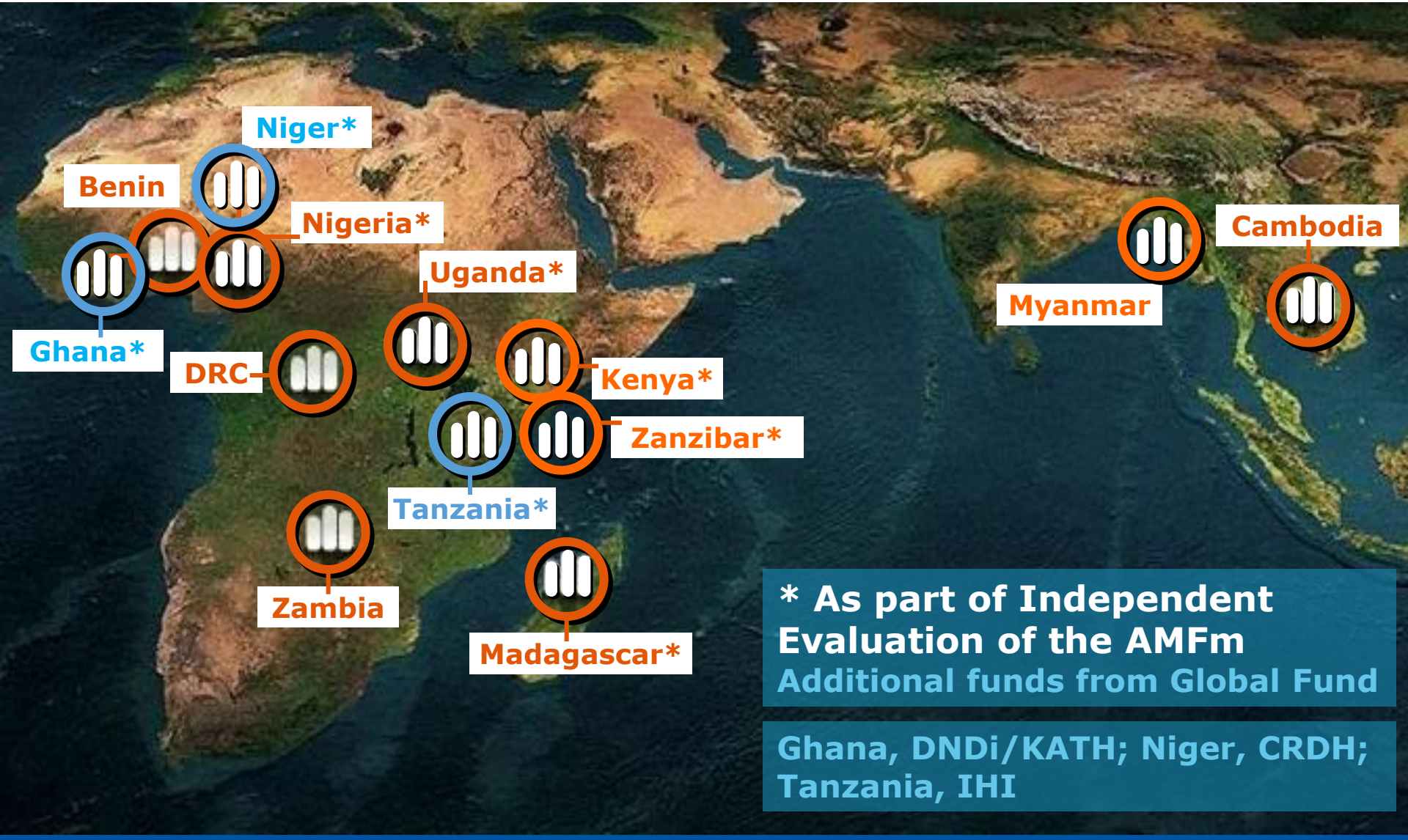
- Sampling frame of wholesalers created by tracing the distribution chain starting from the bottom and working up:
  - From the outlet survey obtained name and address of top 2 antimalarial suppliers (terminal wholesalers)
  - Terminal wholesalers identified and interviewed and obtained name and address of top 2 antimalarial suppliers (intermediate wholesalers)
  - Process repeated with intermediate wholesalers, and so on, until top of the chain is reached

- Data:
  - From each wholesaler: business characteristics, licensing & regulation, audit of each antimalarial and RDT in stock and wholesale mark-ups
  - From the outlet survey: retail mark-ups

Supply chain: Qualitative methods

- Key Informant Interviews (KIIs) with public and private sector stakeholders situated at the top of the supply chain
  - identified through a comprehensive review of relevant documents and through consultation with actors familiar with the country's supply chain
- In-Depth Interviews (IDIs) with a sub-set of antimalarial providers sampled for the quantitative survey
  - Conducted at various levels of the supply chain (retail to the top of the supply chain), and across various settings (urban, rural, accessible, remote)
- Topics: Structure and composition of antimalarial and RDT supply chains; provider conduct (delivery, credit, marketing techniques, prices setting, stocking and supplier choices); perceptions of regulations; cost structure

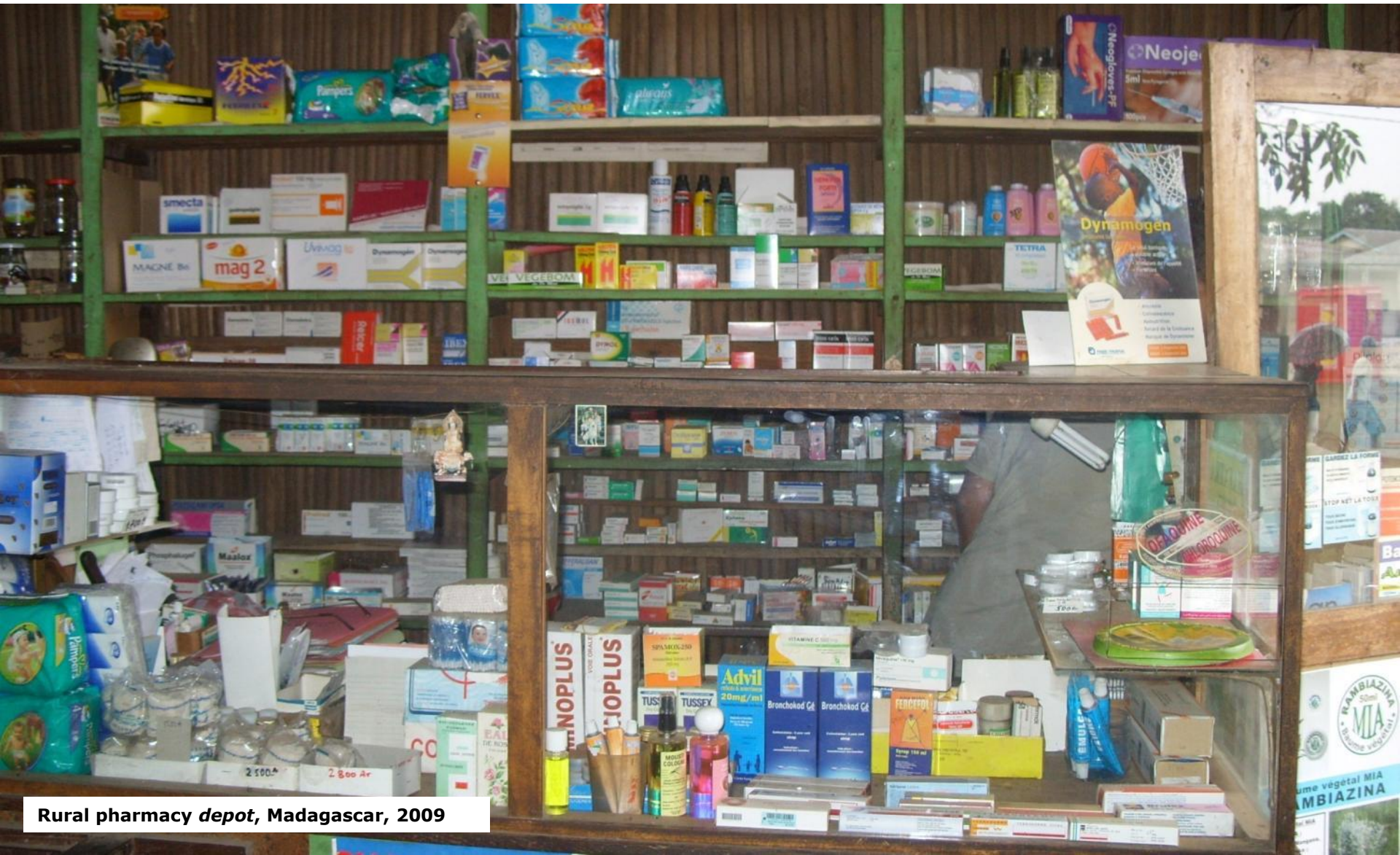
ACTwatch methods used in 13 countries



*** As part of Independent Evaluation of the AMFm**
Additional funds from Global Fund

Ghana, DNDi/KATH; Niger, CRDH; Tanzania, IHI

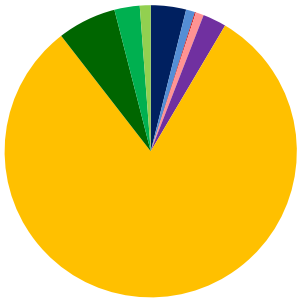
Multi-country results



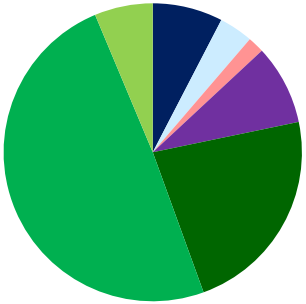
Rural pharmacy *depot*, Madagascar, 2009

Diversity of outlet types with antimalarials in stock

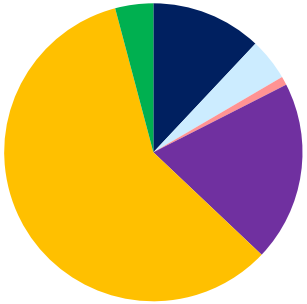
Nigeria
(n=2,113)



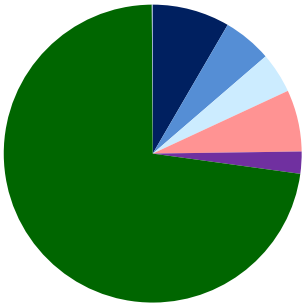
Benin
(n=844)



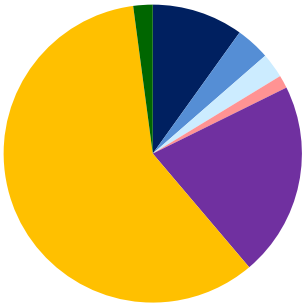
DRC
(n=1,375)



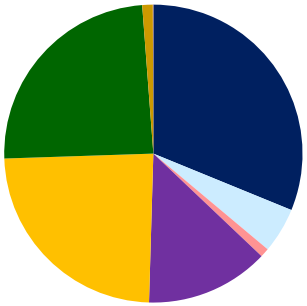
Madagascar
(n=2,414)



Uganda
(n=2,497)



Zambia
(n=435)

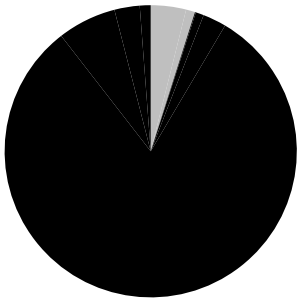


- Public Health Facility (HF)
- Community Health Worker
- Private not-for-profit HF
- Pharmacy
- Private for-profit HF
- Drug Store
- General Retailer
- Kiosk / Stall / Informal seller
- Hawker / Mobile provider

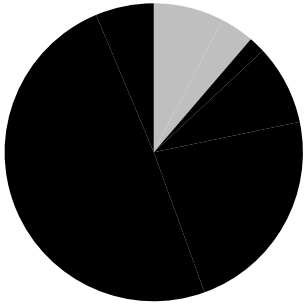
Data from 2009/2010 outlet surveys

Diversity of outlet types with antimalarials in stock

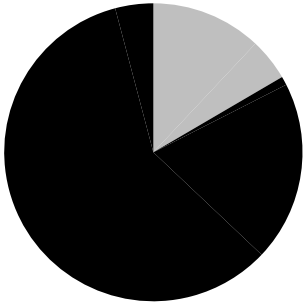
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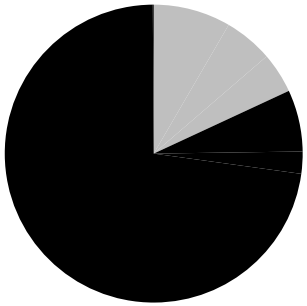
Benin
(n=844)



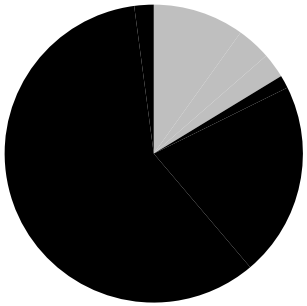
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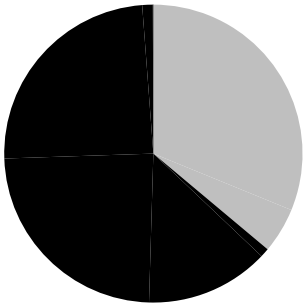
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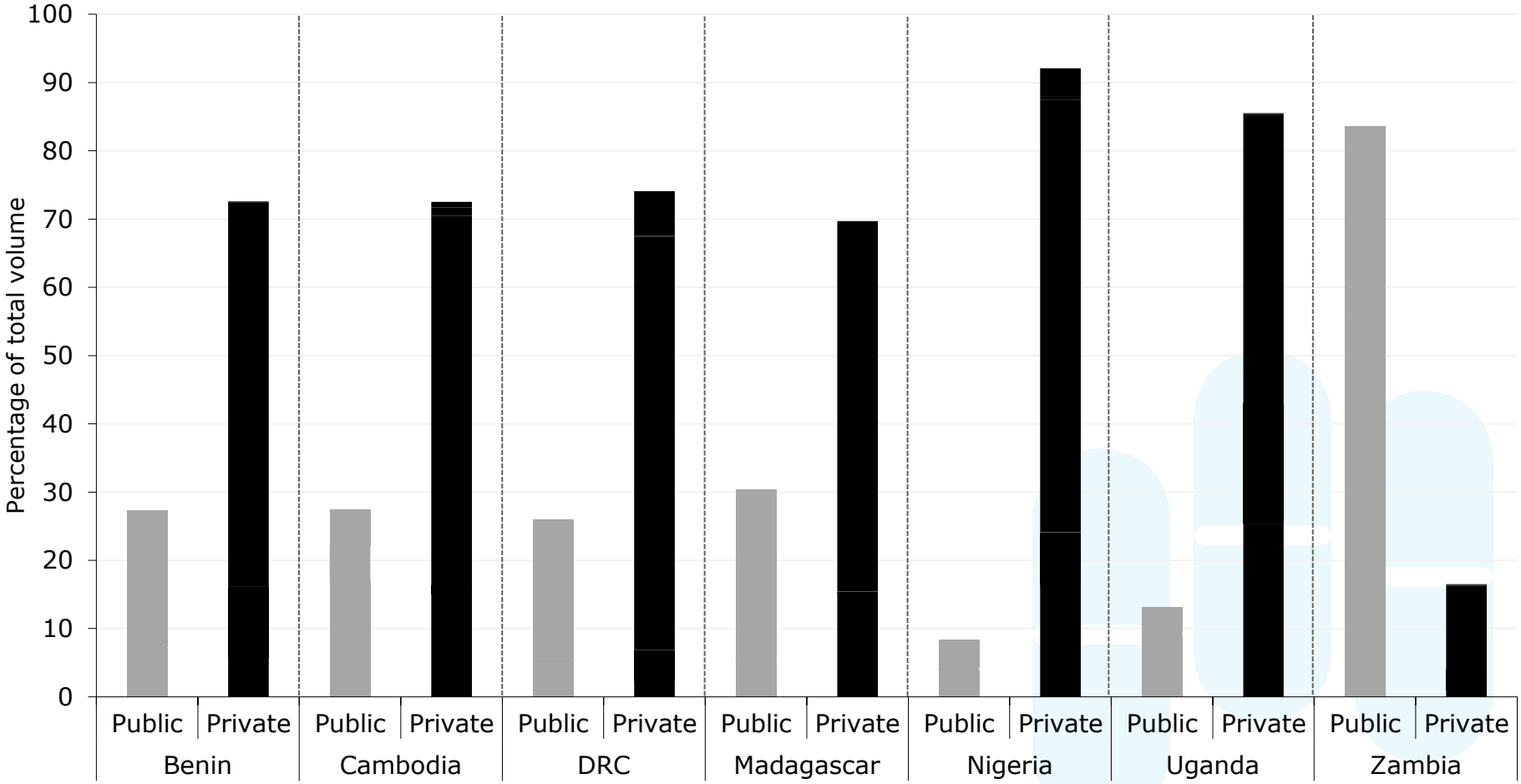


	Public Health Facility (HF)
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Data from 2009/2010 outlet surveys

The private sector's dominant role

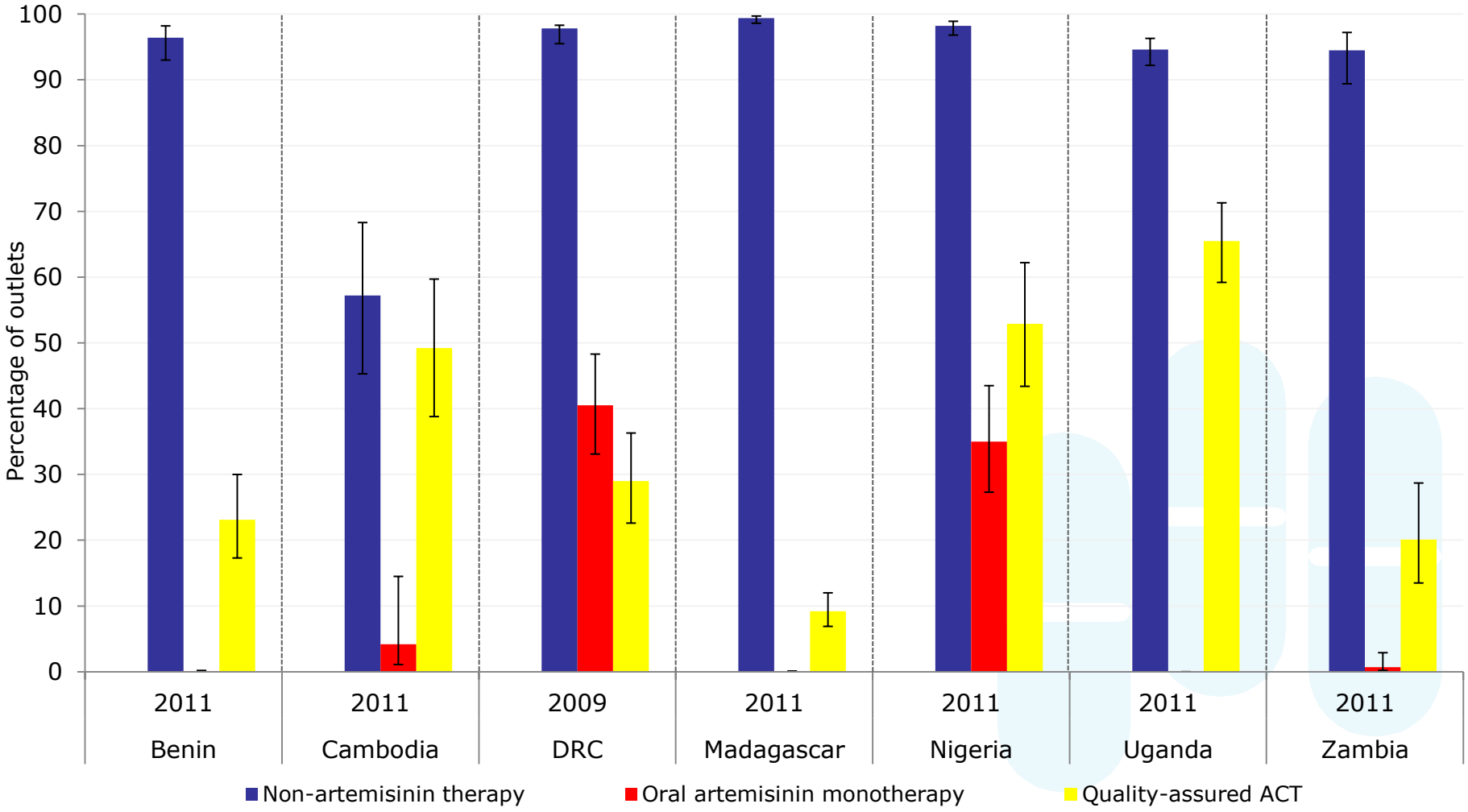
Relative volume of antimalarials sold in the last 7 days in public/not for profit and private for-profit sectors (2011)



DRC data from 2009

Private sector availability of antimalarials

Availability of different antimalarial classes among private-sector outlets stocking antimalarials (2011)



In Cambodia, the quality assured ACT category shows *Any ACT*

Variation in regulatory compliance by wholesalers (2009-2010)

% of wholesalers that… (N)	Benin	Cambodia	DRC	Nigeria	Uganda	Zambia
Employed a staff member with health-related qualifications	28.7 (142)	63.4 (93)	92.8 (138)	62.8 (137)	100.0 (128)	97.6 (42)
Any up-to-date pharmacy license from the DRA was observed	0.9 (196)	29.5 (95)	19.9 (136)	8.7 (138)	82.0[+] (128)	70.0 (40)
Reported they had been visited by an inspector in the past year	15.2 (189)	82.4 (91)	94.2 (138)	71.2 (132)	99.2 (123)	97.5 (40)







[+] In Uganda this includes wholesalers who had a recently valid pharmacy license (i.e. Expired Nov or Dec 2008) as licences for 2009 were still being processed by the authorities at the time of data collection

Diagnostics in the private for-profit sector

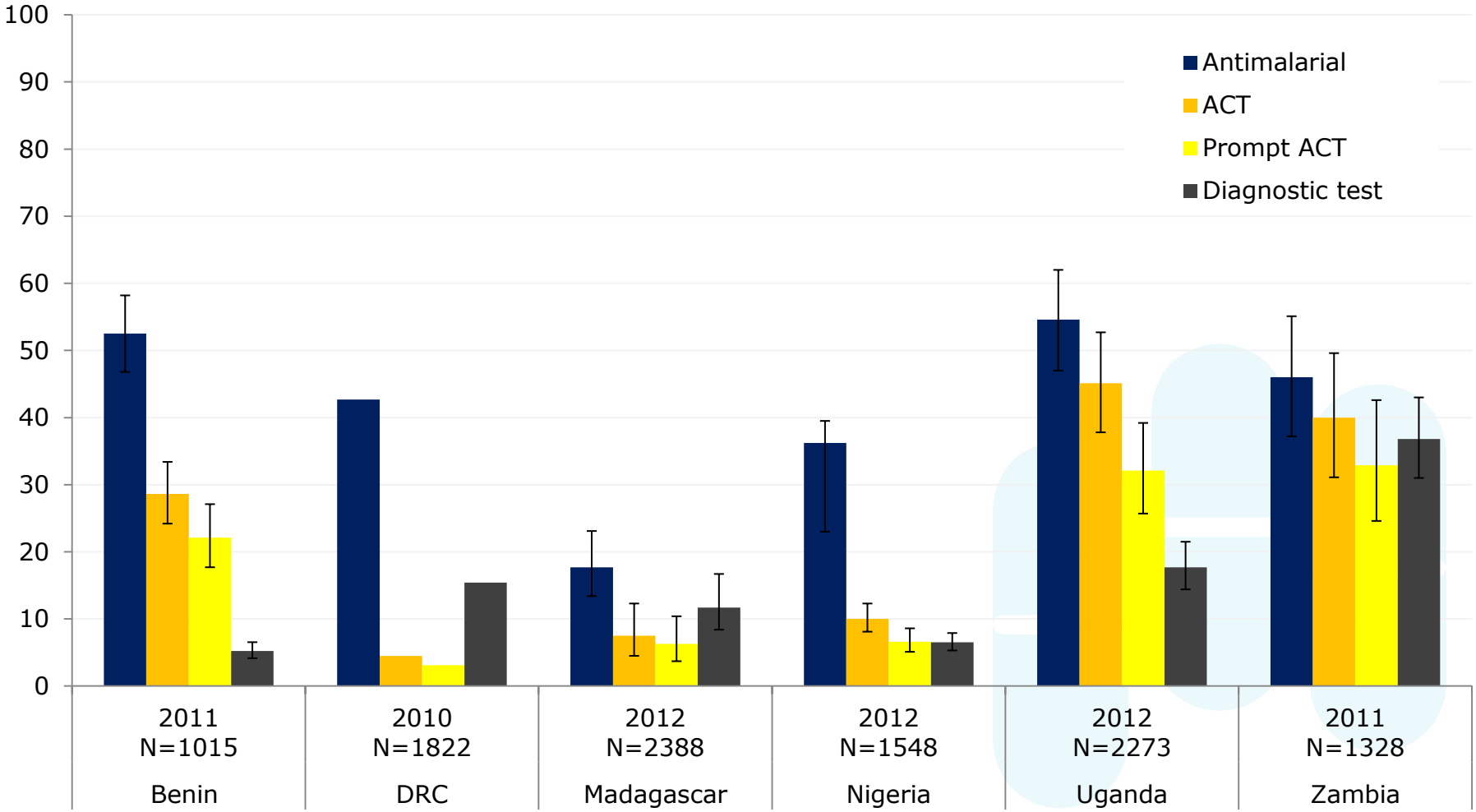
Availability of RDTs at the retail level (2011) and availability and sales volumes of RDTs among private sector wholesalers (2009-2010)

Characteristic: (N)	**Benin**	**Cambodia**	**DRC**	**Nigeria**	**Uganda**	**Zambia**
Outlet/retailer RDT availability [%]	1.1 (1079)	34.0 (777)	6.8* (1270)	1.4 (1415)	9.3 (2397)	9.3 (565)
Wholesaler RDT availability [%]	4.4 (204)	86.3 (95)	2.2 (138)	3.6 (138)	18.0 (128)	23.3 (43)
Wholesaler RDT sales volumes [median/week]	0 (201)	0 (93)	0 (137)	0 (136)	0 (127)	0 (40)

* Data for DRC collected in 2009

Treatment-seeking behaviour for children with fever

Percentage of children under five with fever in the past two weeks who received an antimalarial, an ACT, a promt ACT, and a diagnostic test (2010/2011)



Focus on Nigeria



Nigeria: country profile



Population: 158M

25% of malaria cases in Africa

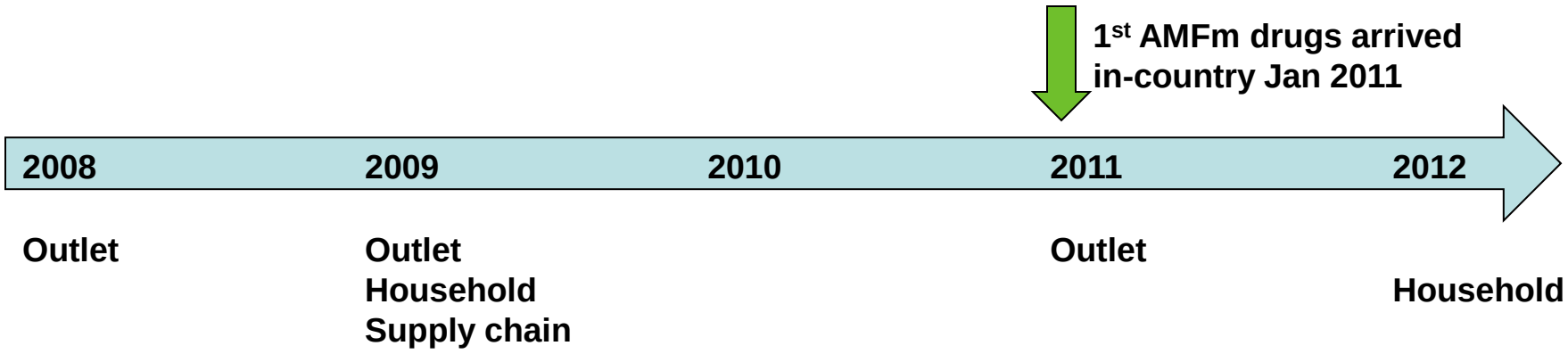
Mainly *P.falciparum*

Oral artemisinin monotherapy controls introduced in 2006

Major external financing: WB, PMI, DFID & GF

AMFm phase 1 pilot country

Nigeria: ACTwatch timeline



Outlet	2009: Sep/Oct	6,089 outlets approached 2,210 outlets met screening criteria
	2011: Oct/Nov	8,507 outlets approached 1,567 outlets met screening criteria
Household	2009: Aug/Sep	4,649 households approached 2,860 households met screening criteria
	2012: June/July	8,258 households approached 1,312 households met screening criteria
Supply chain	2009: July/Aug	Quantitative: 140 wholesalers interviewed Qualitative: 9 key informants and 30 in-depth

A complex and competitive supply chain



Idumota market, Lagos (© All rights reserved by TheSupplyChainLab)

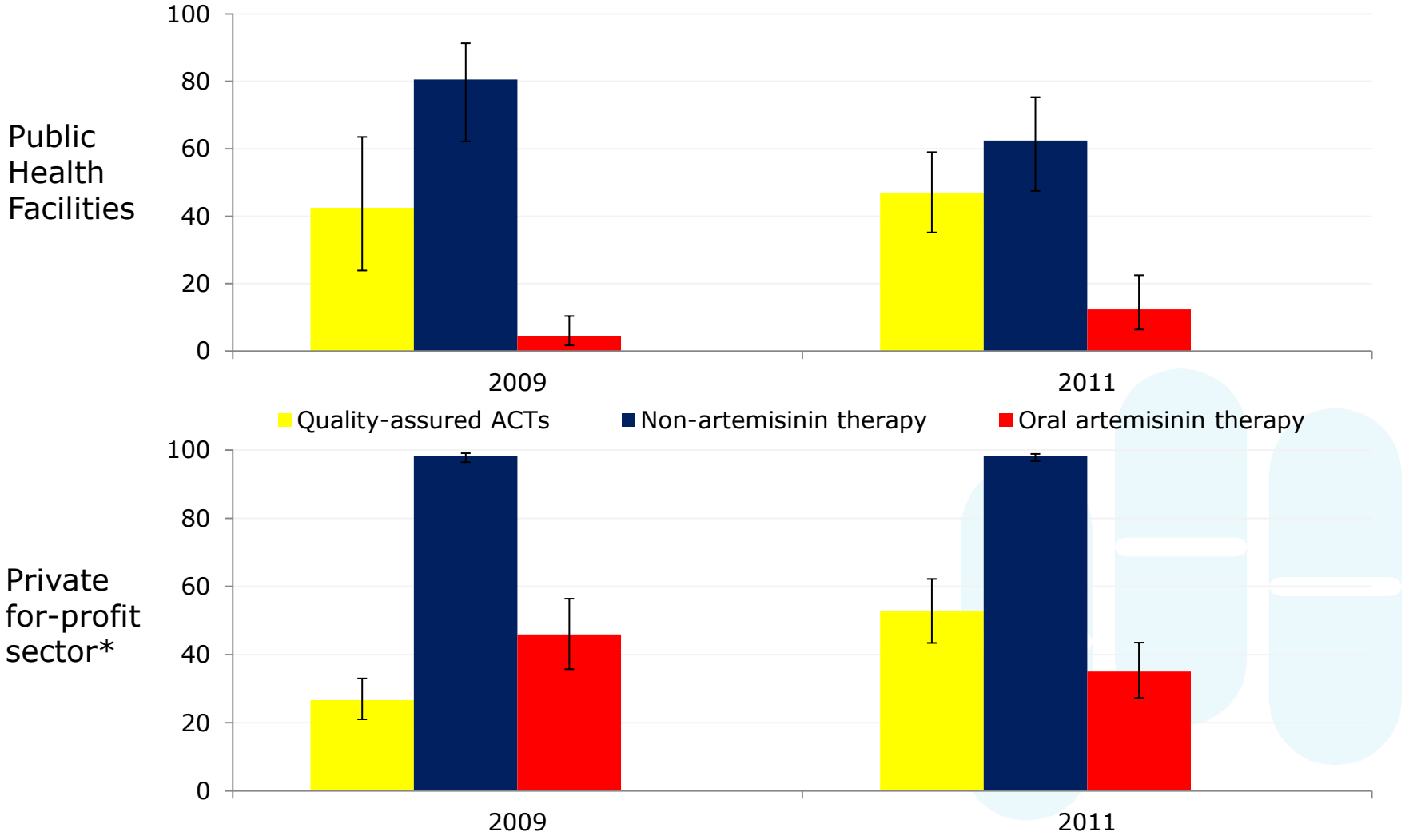
- Considerable domestic manufacturing capacity
- Sophisticated business practices
  - diverse marketing practices
  - vertically integration
  - specialised logistics companies
- Unlicensed wholesaling is also common
  - PPMVs in traditional markets

Traditional markets are key centres for both the wholesale and retail of antimalarials

Data collected in 2009

Availability in PHFs and the private sector

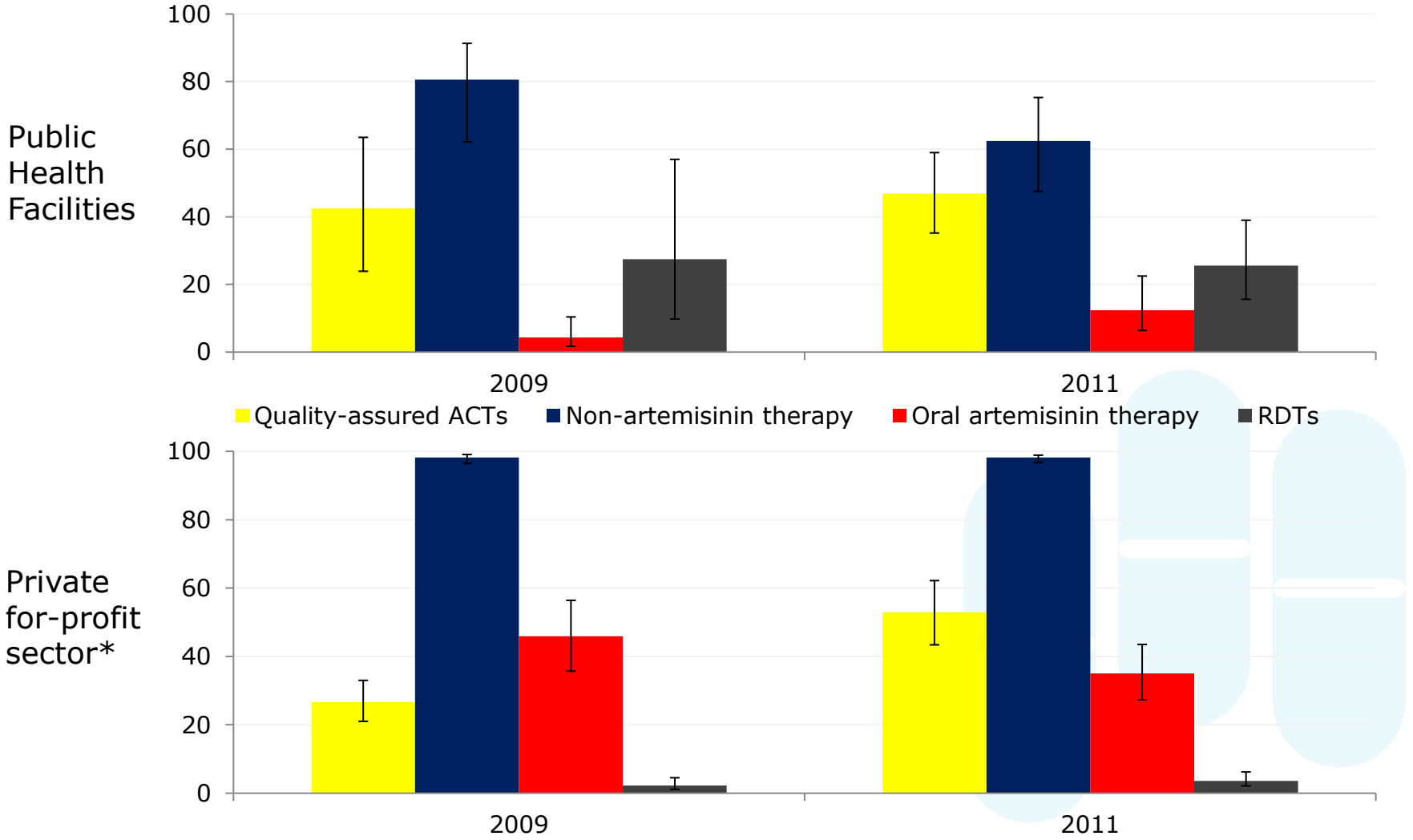
Availability of different antimalarial classes by sector, 2009 and 2011



** Among outlets stocking at least one antimalarial drug*

Availability in PHFs and the private sector

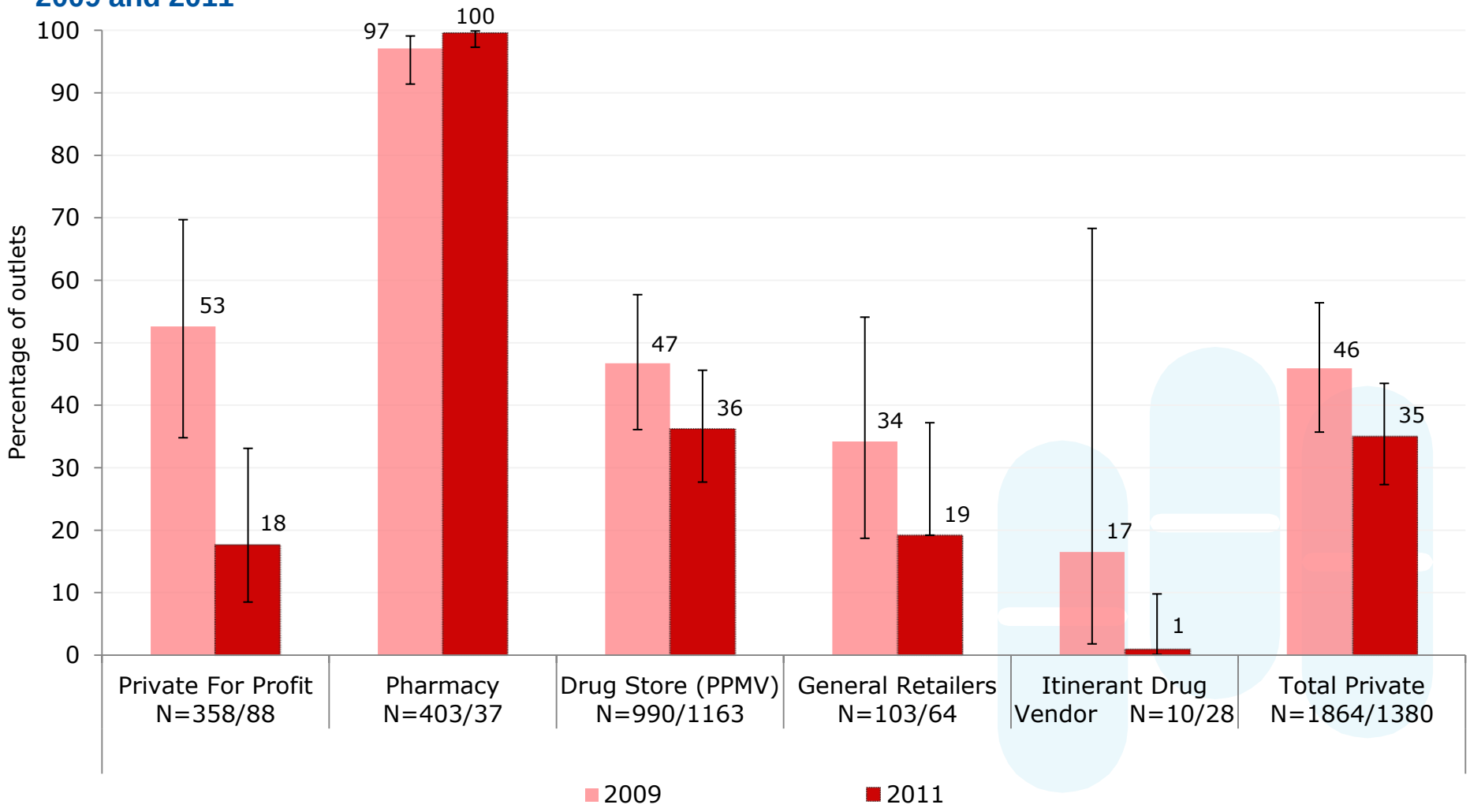
Availability of different antimalarial classes and RDTs by sector, 2009 and 2011



** Among outlets stocking at least one antimalarial drug*

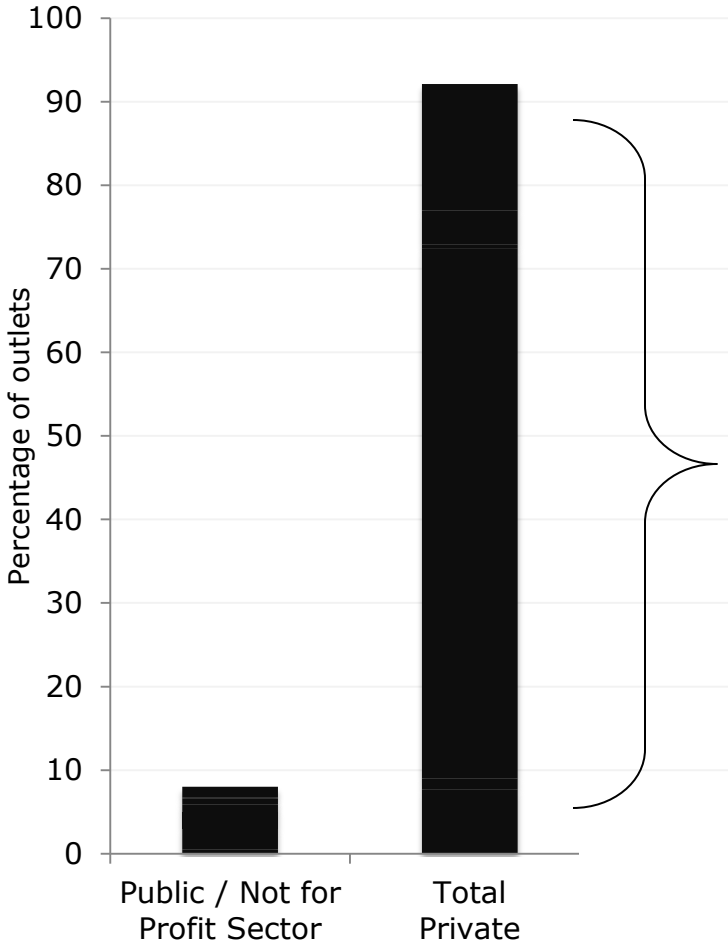
1 in 3 private sector outlets continue to stock oral artemisinin monotherapy

Availability of oral artemisinin monotherapy in private sector outlets with antimalarials in stock, 2009 and 2011



Which outlets are selling/distributing what types of antimalarials?

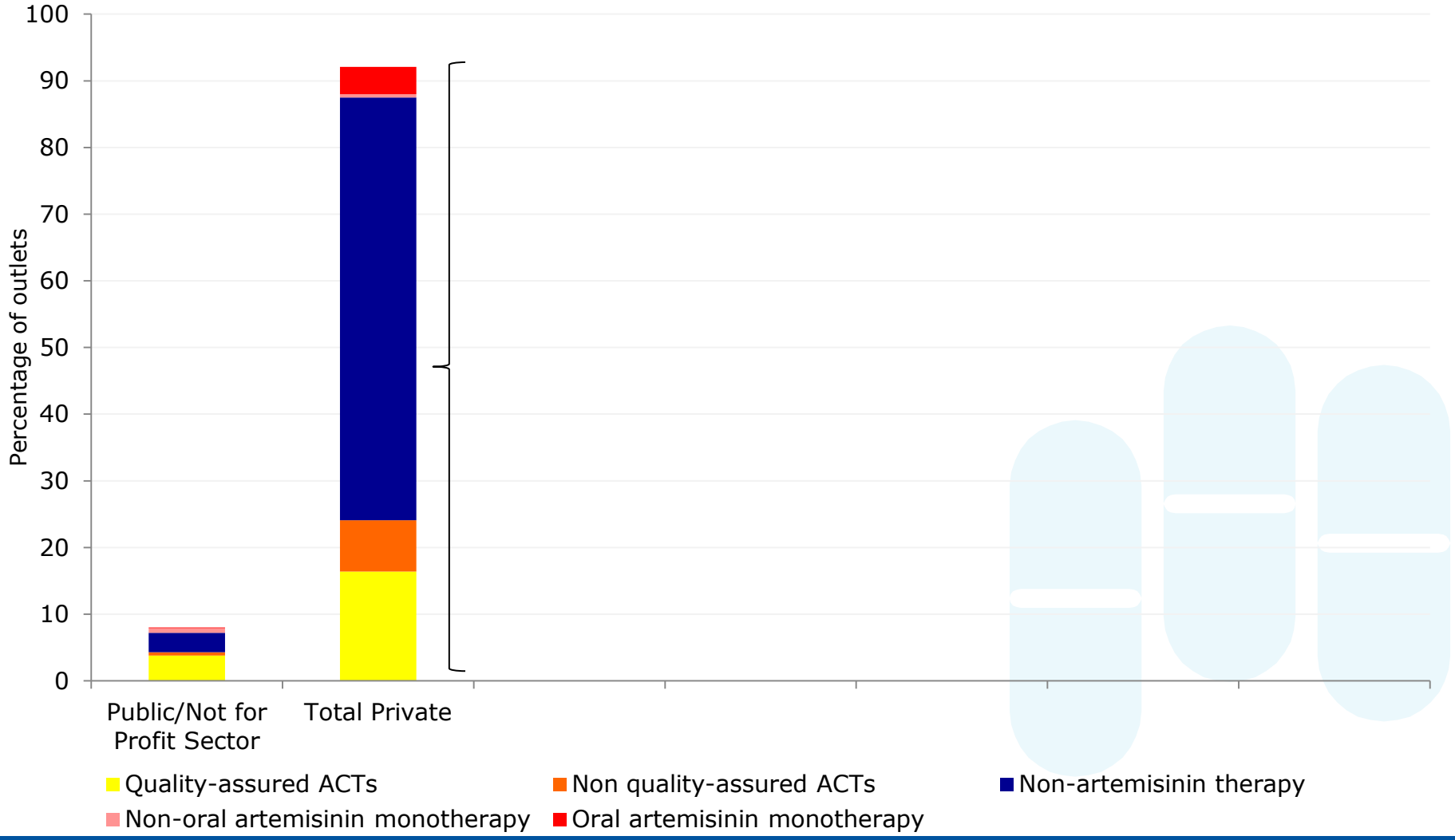
Market share of adult equivalent treatment doses (AETDs) of antimalarials sold/distributed in the past 7 days (2011)



- Private health facilities
- Pharmacies
- Drug shops (PPMVs)
- General retailers
- Itinerant drug vendors

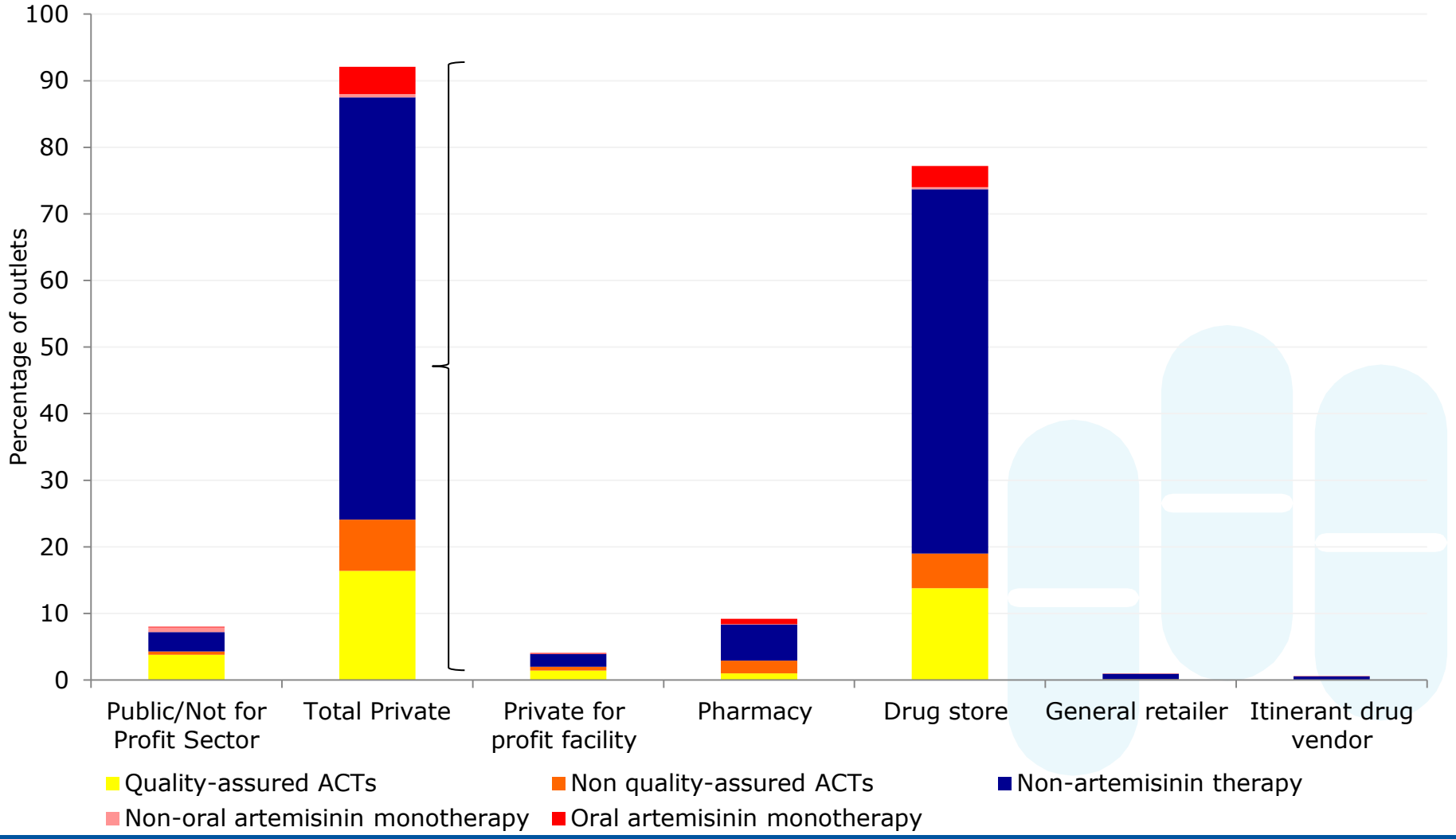
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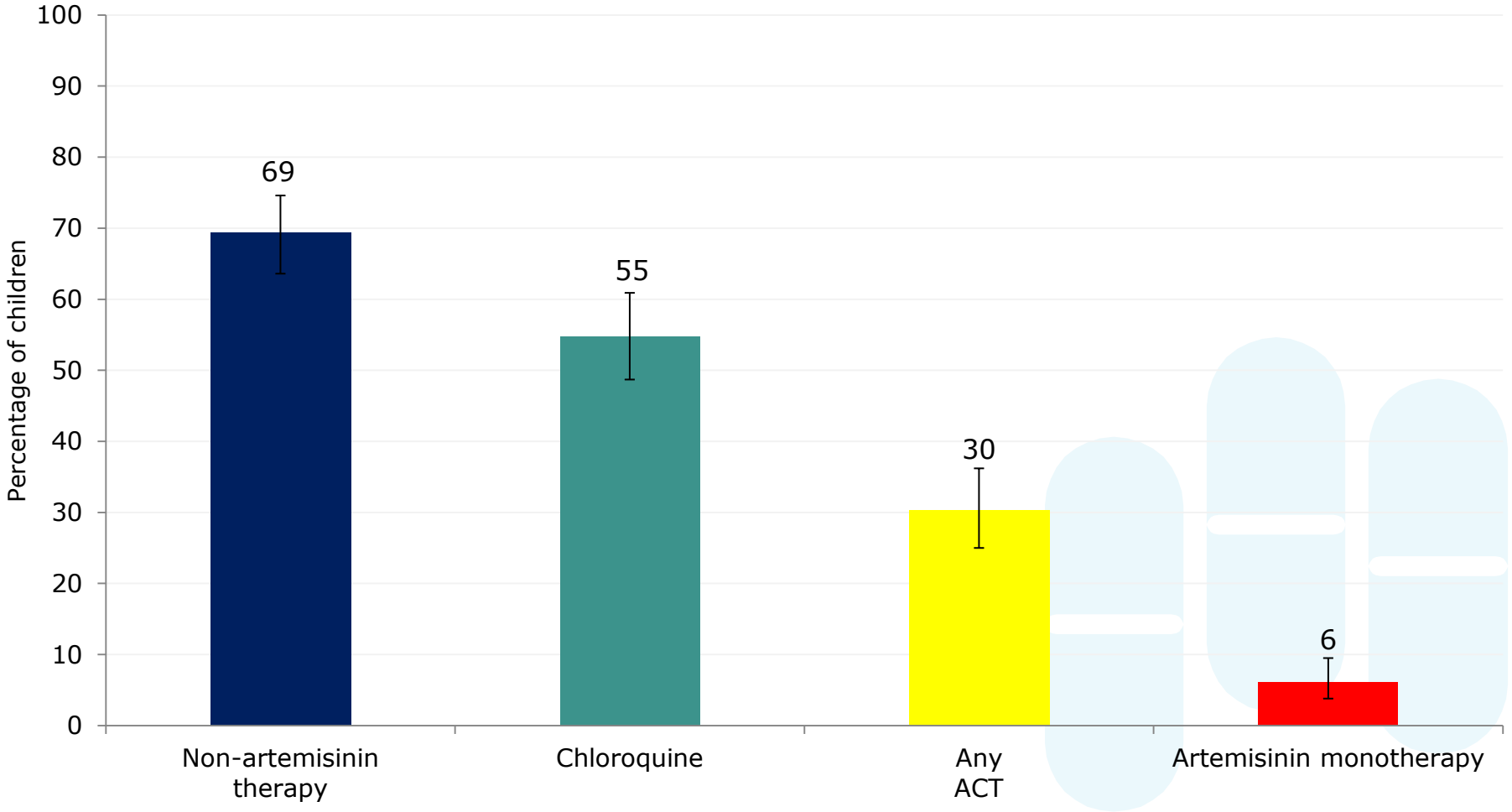
Which outlets are selling/distributing what types of antimalarials?

Market share of adult equivalent treatment doses (AETDs) of antimalarials sold/distributed in the past 7 days (2011)



What antimalarials do children receive?

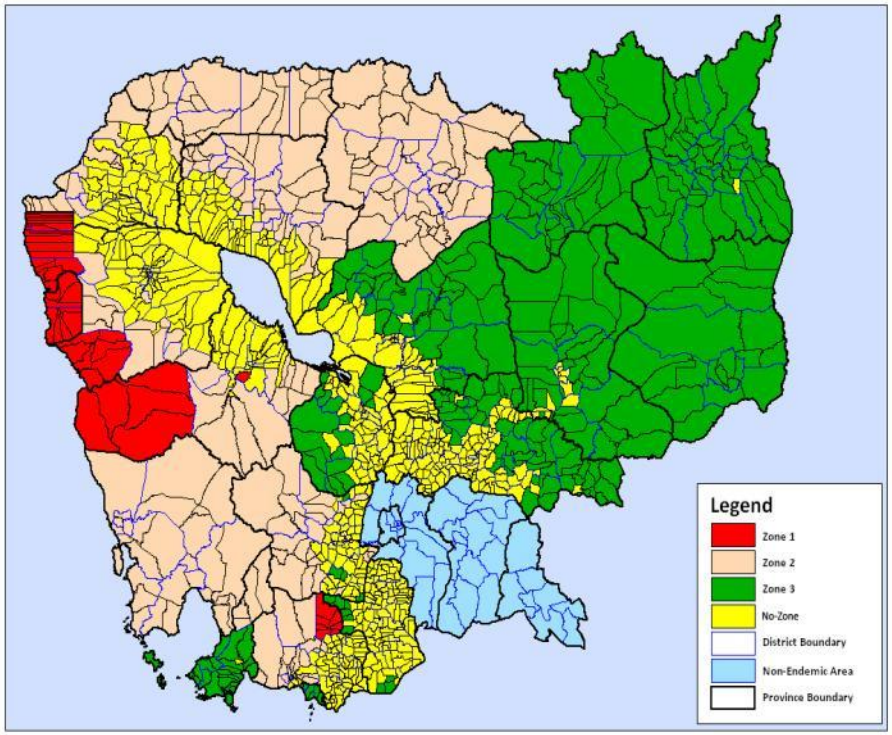
Proportion of children under five who received a given antimalairal class, among children who recieved an antimalarial, 2011 (n=565)



Focus on Cambodia



Cambodia country profile (2011)



Very low transmission

P.f. 1st line: DHA-Pip (zone 1), AS+MQ

ACT & RDT private sector subsidy since 2004

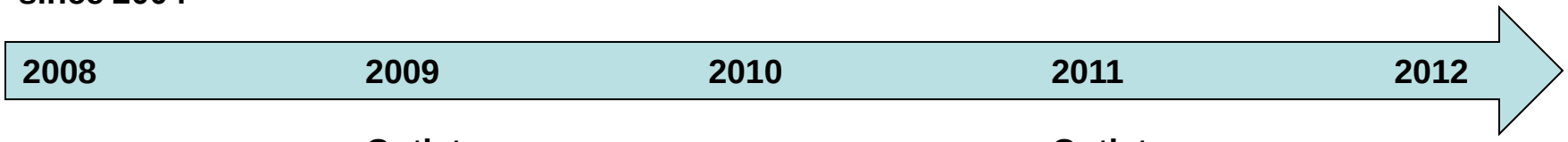
CNM – Designated Three Zones:

- **Zone 1** Containment Program
- **Zone 2** [2½ years – BMGF]
- **Zone 3** & **"No Zone"**

Dynamic policy/strategy environment aimed at containing drug resistance

Cambodia: ACTwatch timeline

ACT and RDT subsidy since 2004



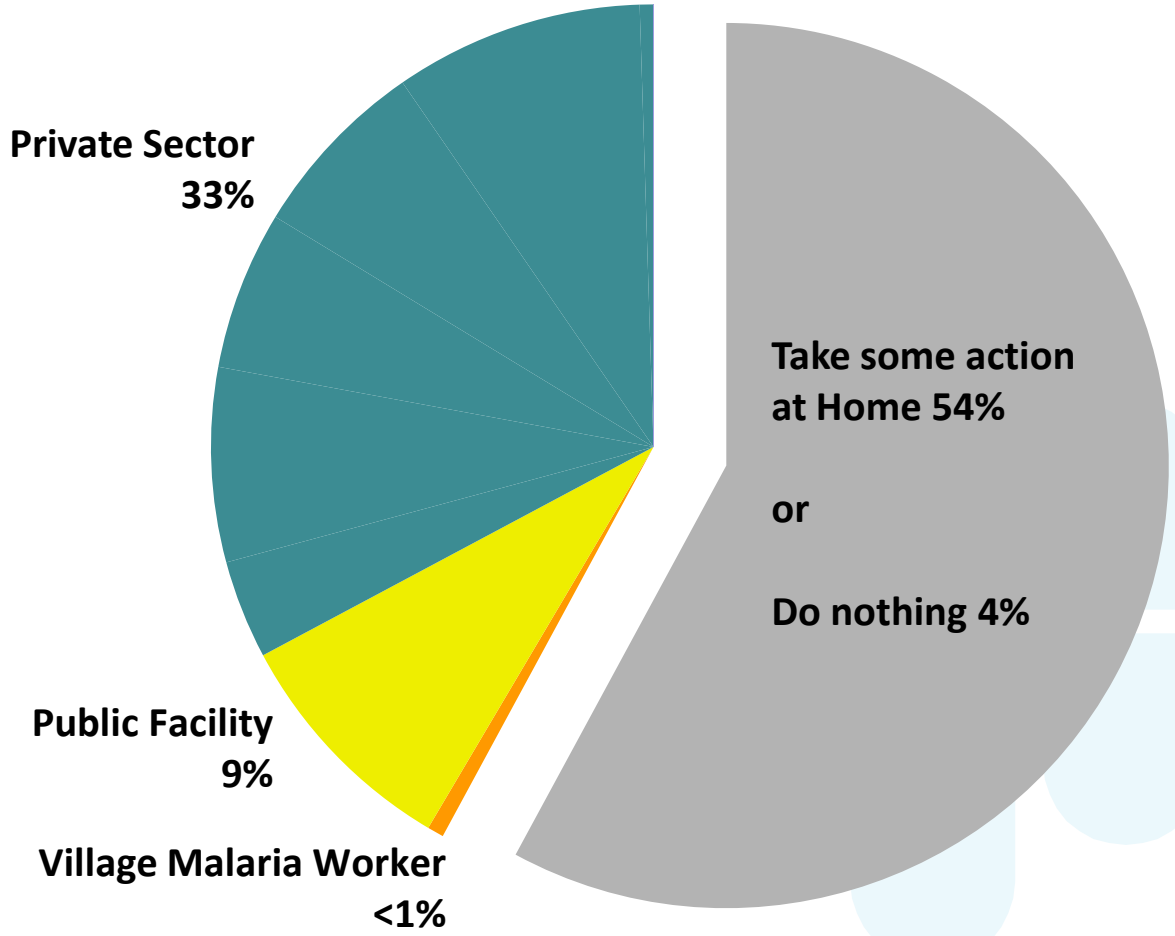
2009
Outlet
Household
Supply chain

2011
Outlet
Household

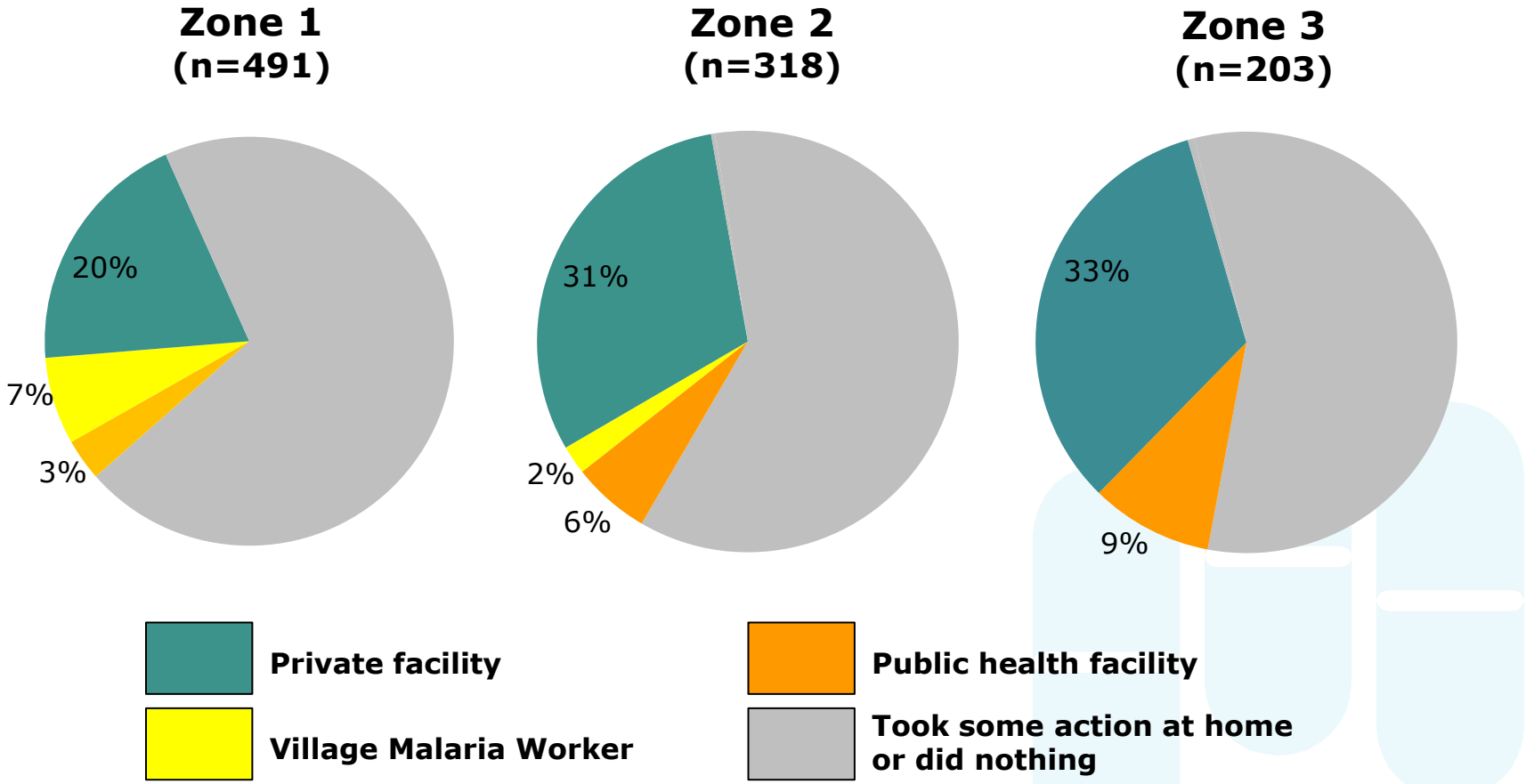
Outlet	2009: June/July	7,833 outlets approached 1,019 outlets met screening criteria
	2011: June/Aug	18,584 outlets approached 1,529 outlets met screening criteria
Household	2009: Oct/Nov	22,371 households approached 1,465 households met screening criteria
	2011: Nov/Dec	20,895 households approached 1,013 households met screening criteria
Supply chain	2009: Aug/Nov	Quantitative: 95 wholesaler interviews Qualitative: 19 semi-structured interviews

What do people initially do when they think they have malaria?

80% of people who initially seek treatment outside the home go to private sector

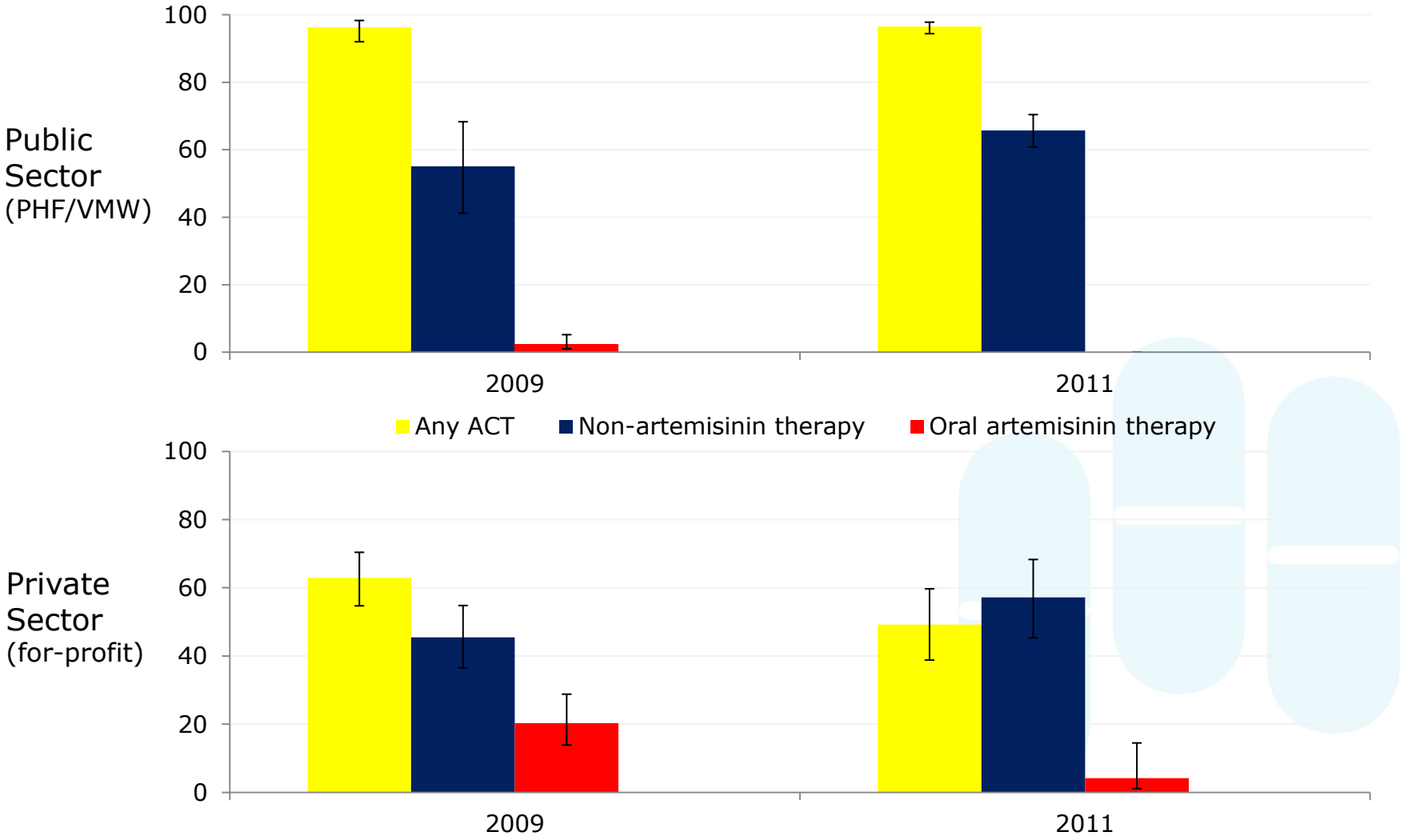


Do initial actions differ by containment zone?



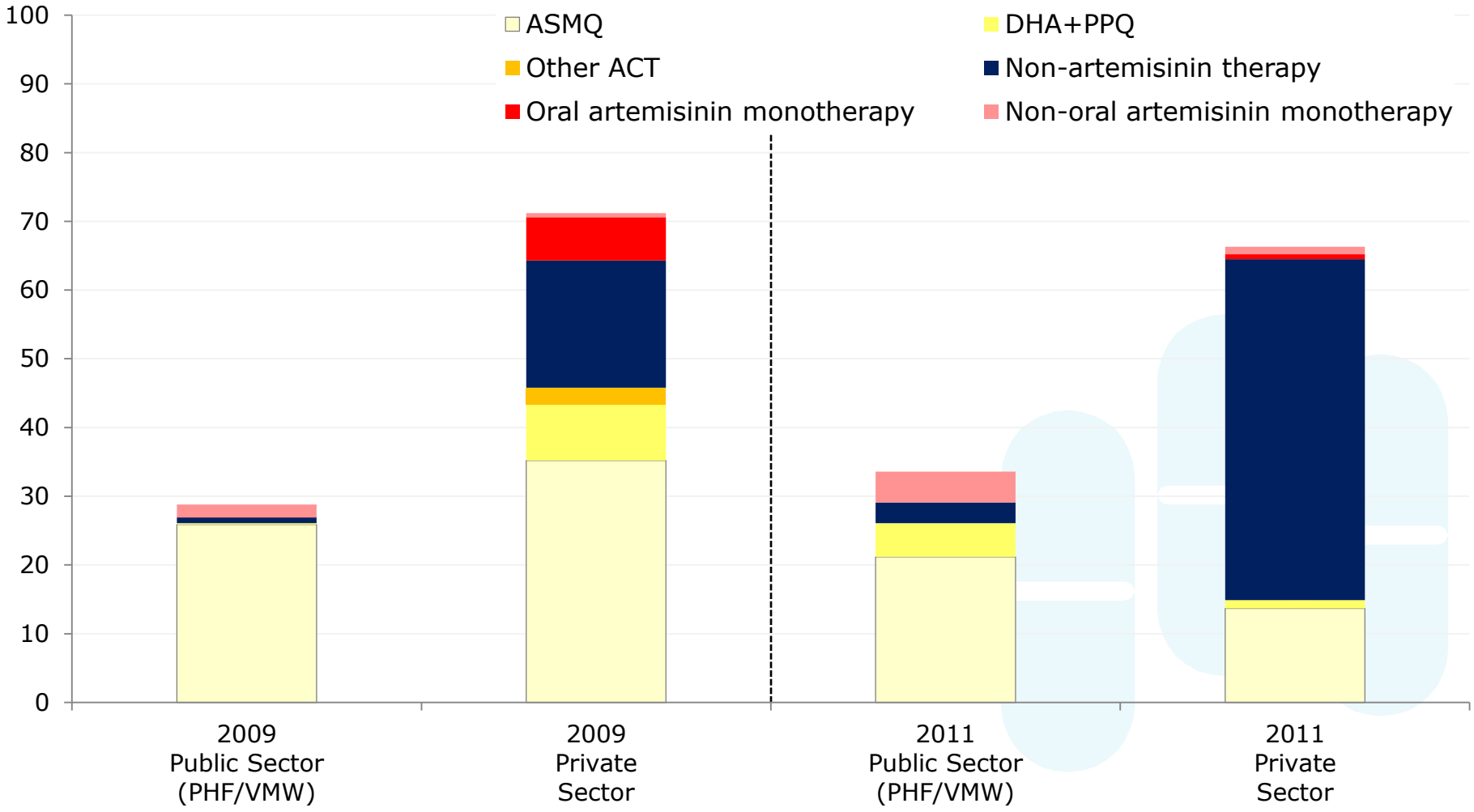
What antimalarials did patients find in retail outlets in 2011, compared with 2009?

Availability of different antimalarial classes among outlets with antimalairals in stock, by sector in 2009 and 2011



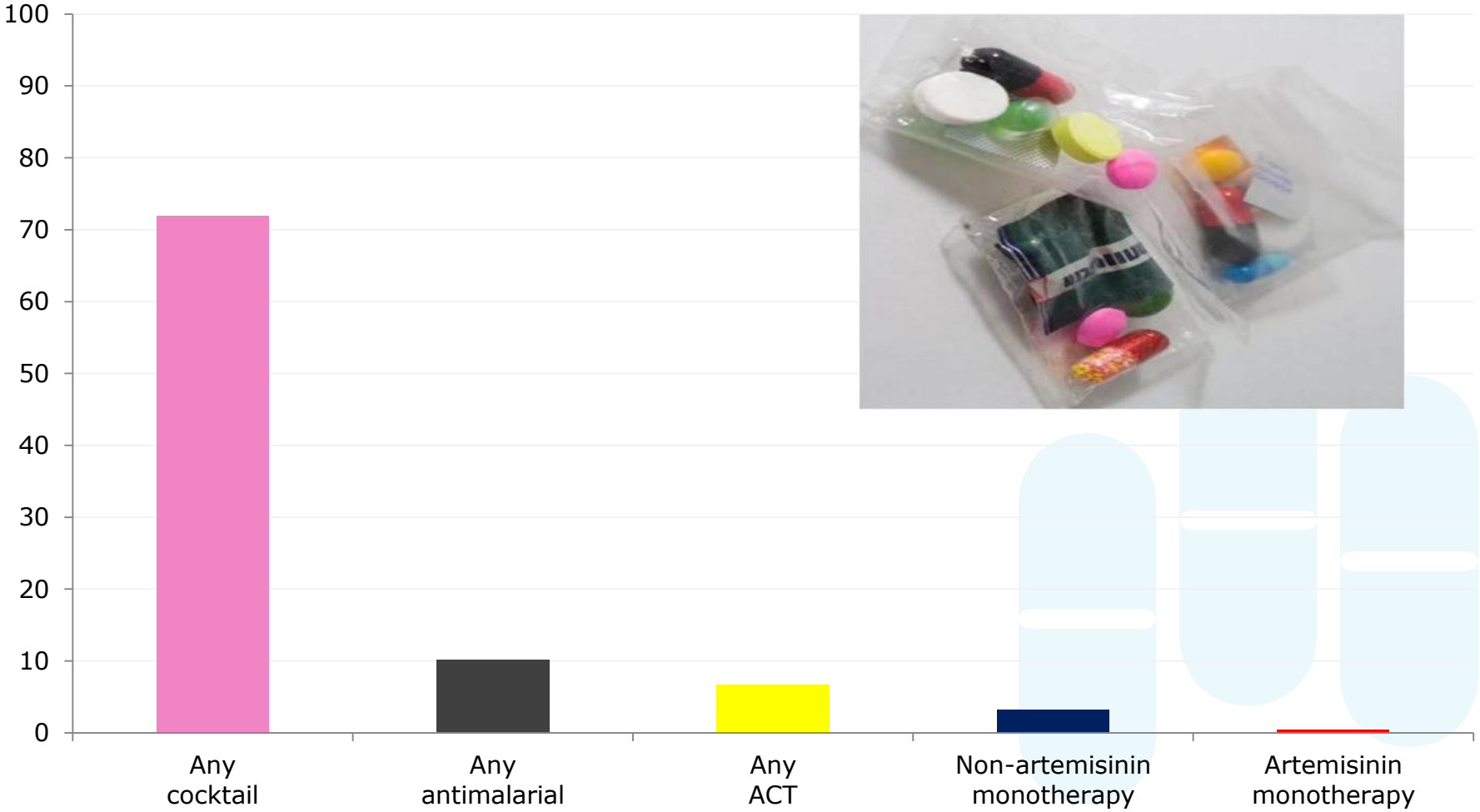
…and which antimalarials are outlets selling?

Availability of different antimalarial classes among outlets with antimalairals in stock, by sector in 2009 and 2011



Household survey data show a more complicated picture

Proportion of people who received antimalarial and/or cocktail treatment among those reporting they had *malaria fever*, 2011



What are 'cocktails'?



- Typically contain 3-7 drugs
  - antipyretics, antihistamines, caffeine, vitamins, antibiotics
  - Not all contain antimalarials (quinine, chloroquine, artesunate)
- Made-to-order by dispenser, but also sold by wholesalers
- Patients often unaware contents



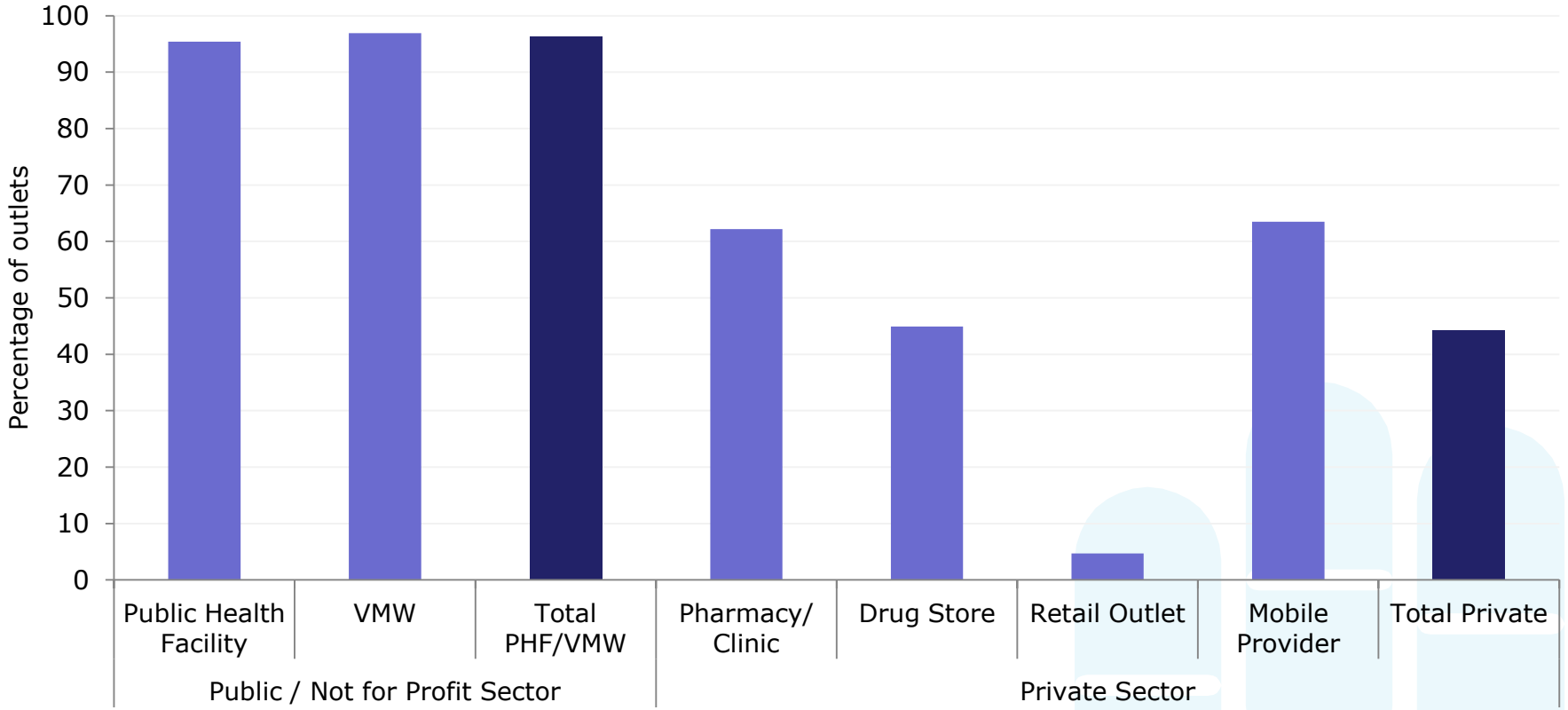
For retailers, the provision of cocktails was:

- More profitable than selling only other drugs
- Reflection of expertise and quality of treatment delivered

"Multiple symptoms require multiple medicines"

Diagnostic testing: are tests available?

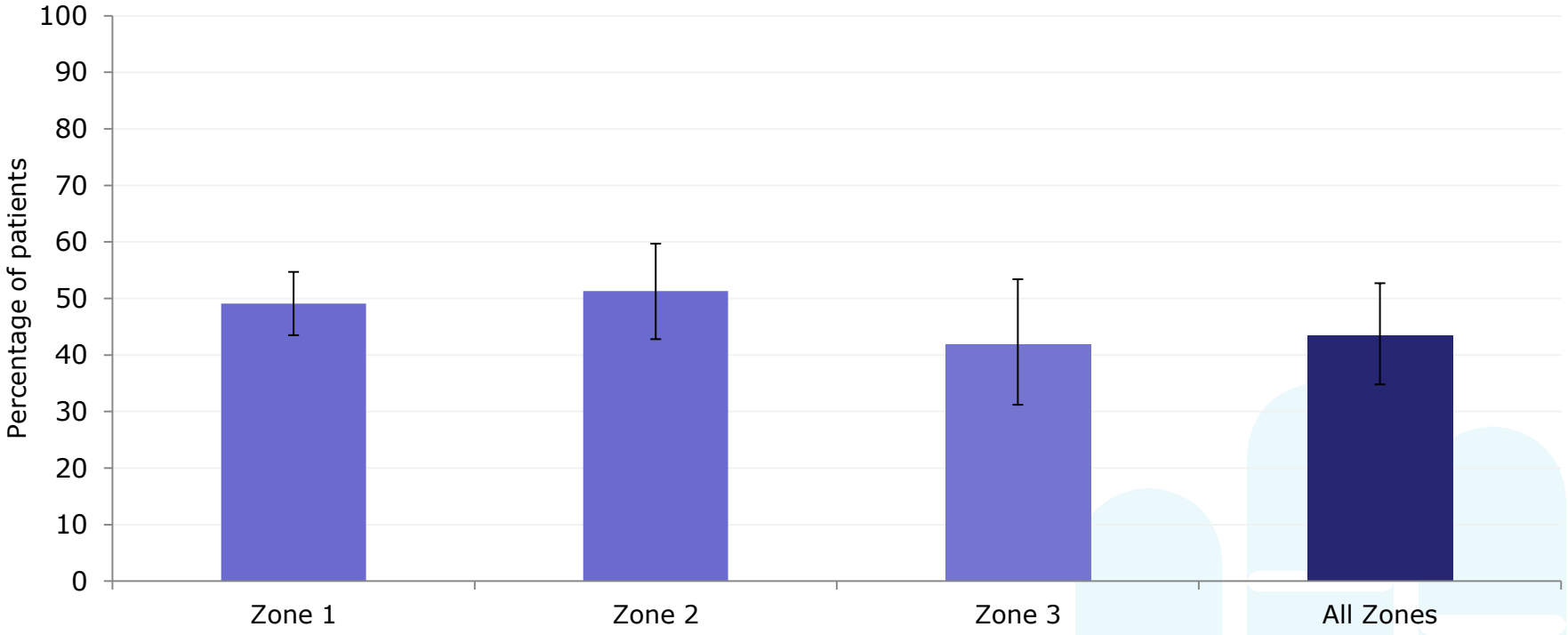
Availability of any diagnostic test among outlets with antimalairals in stock in the past three months, (2011)



Although RDTs were available in many private businesses and perceived as easy to use, they were also considered less precise than microscopy and as not adding value to the services and products being offered.

Diagnostic testing: are patients being tested?

Proportion of people with *malaria fever* who report receiving a diagnostic test, by containment zone (2011)



Overall 44% of people with malaria fever *were tested.*

65% reported receiving an RDT; 27% reported microscopy; 12% couldn't recall the type of test.

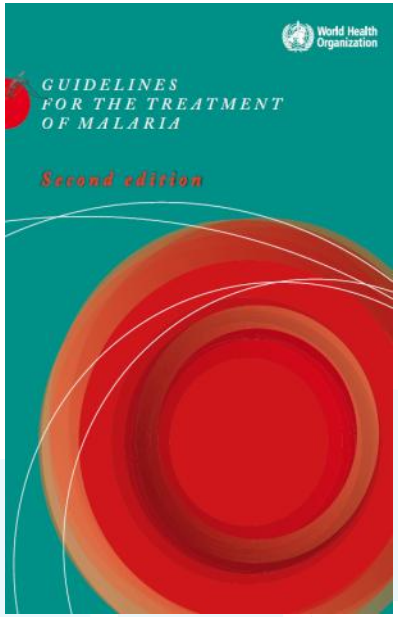
Impact and Future



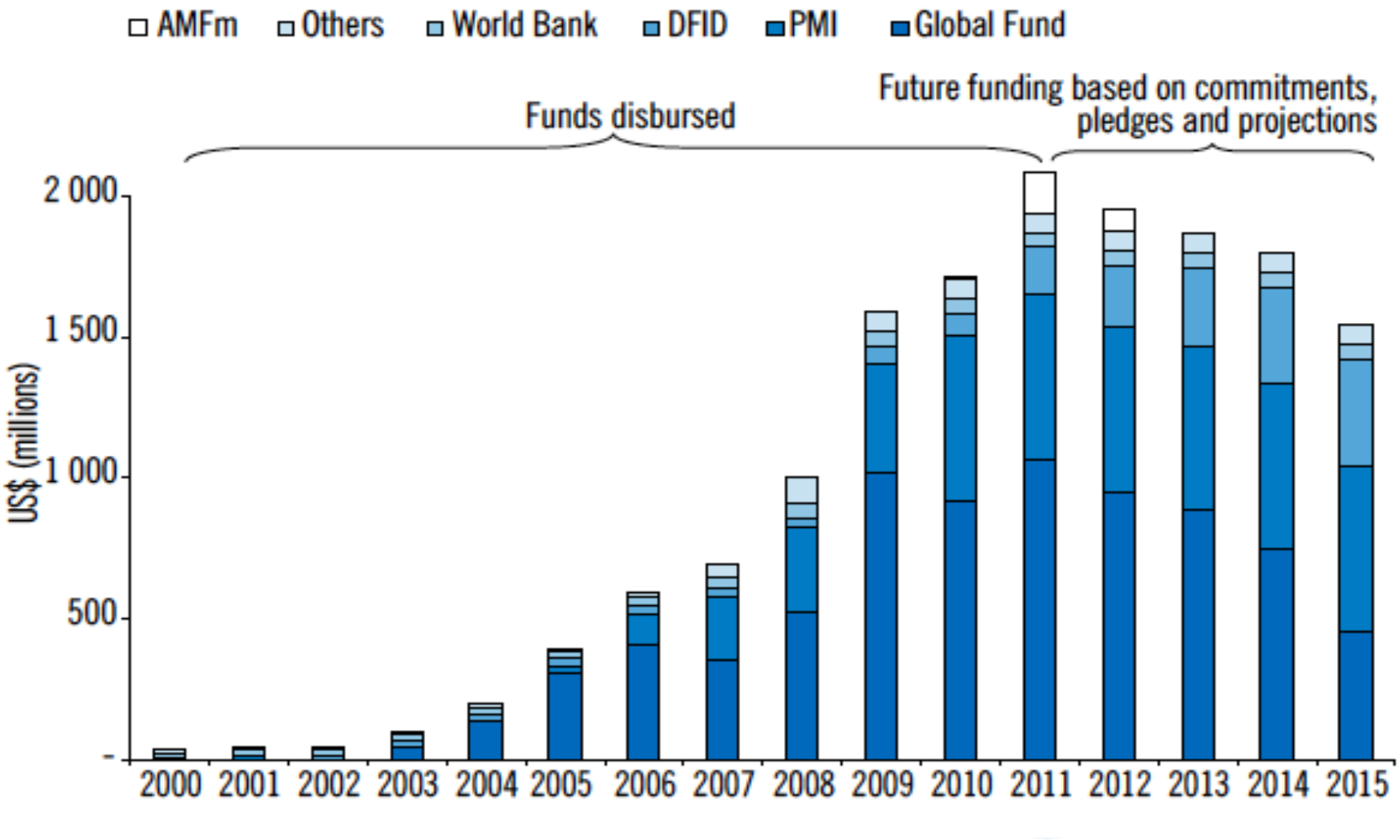
Household survey, Uganda, 2012

Changes to WHO Treatment Recommendations, 2010

Prompt parasitological confirmation by microscopy or by RDTs is recommended in all patients suspected of malaria before treatment is started.



Past and projected international funding for malaria control



Source: WHO World Malaria Report 2011

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