



ACTWATCH RESEARCH BRIEF

*Malaria market trends in Sub-Saharan Africa:
2009-2015*

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WHAT IS ACTWATCH?

ACTwatch is a multi-country research project implemented by Population Services International (PSI). Standardized tools and approaches are employed to provide comparable data across countries and over time. ACTwatch is designed to provide timely, relevant, and high-quality antimalarial market intelligence, including information on artemisinin-based combination therapies (ACT), the most effective treatment for malaria. The project was launched in 2008 with funding from the Bill and Melinda Gates Foundation (BMGF), and was funded through 2016 by the BMGF, UNITAID, and the Department for International Development (DFID).

Research methods implemented include outlet and household surveys, supply chain studies, key informant interviews, and modules to document private-sector fever case management practices using observation and client exit interviews.

GOAL

The goal of the ACTwatch project is to provide policymakers with evidence to inform and monitor national and global policy, strategy, and funding decisions for improving malaria case management and elimination efforts.

RELEVANCE

ACTwatch data provide timely and practical evidence for national malaria programs and their partners. The project monitors antimalarial markets in the context of policy shifts and investments in the scale-up of first-line ACT and blood testing using malaria rapid diagnostic tests (mRDT). This has included adaptation of project methods for the evaluation of the Affordable Medicines Facility-malaria (AMFm) pilot.

OUTLET SURVEYS

Outlet surveys are the core component of ACTwatch. In sub-Saharan Africa (SSA), outlet surveys have been implemented in Benin, the Democratic Republic of Congo (DRC) (in Kinshasa and Katanga), Kenya, Madagascar, Nigeria, Tanzania, Uganda, and Zambia. In the Greater Mekong Sub-Region (GMS), project countries include Cambodia, Lao People's Democratic Republic (PDR), Myanmar, and Thailand.

This report presents trend data across eight countries in sub-Saharan Africa from surveys implemented between 2009 and 2015. Additional data collection occurred in 2016 in Benin, Kenya, and Tanzania.

ACTwatch

Works in 12 project countries in sub-Saharan Africa and the Greater Mekong Sub-Region

Completed in sub-Saharan Africa between 2009 to 2015:

- 27 outlet surveys
- 201,250 outlets screened
- 329,000 antimalarials audited

WHAT QUESTIONS ARE ANSWERED BY THE OUTLET SURVEYS?

The outlet surveys address a number of key questions:



What types of outlets in the public and private sectors are distributing antimalarials and providing malaria blood testing?



What types of antimalarials and mRDT are available and distributed by the public and private sectors?



What proportion of public- and private-sector antimalarial medicine outlets are stocking: 1) quality-assured ACT, 2) non quality-assured ACT, and 3) malaria blood testing?



What is the antimalarial market share of quality-assured ACT relative to the market share for other types of antimalarials?



What is the consumer price for antimalarial medicines and malaria blood testing among private-sector outlets?



Outlet survey methods

ACTwatch implements standardized methods and questionnaires that allow for comparisons between countries and survey rounds. A full census of all outlets providing malaria care and a full audit of all available antimalarials provides a complete picture of the antimalarial market.

HOW IS THE SAMPLING CONDUCTED?

A nationally representative sample of outlets providing antimalarials to consumers is selected. Typically, a one-stage probability-proportional-to-size cluster design is used to select clusters within each stratum, with cluster population serving as the measure of size. The primary sampling unit, or cluster, is usually an administrative unit with 10,000 to 15,000 inhabitants.

WHAT TYPES OF OUTLETS ARE SAMPLED?

The main types of outlets sampled include public and not-for profit health facilities, community health workers (CHW), private health facilities, pharmacies, drug stores, and grocery stores/kiosks. In addition, a range of other outlet types are considered relevant in specific countries, including market stalls and mobile drug vendors.

HOW ARE THE OUTLETS IDENTIFIED?

The ACTwatch outlet survey includes all outlets with the potential to sell antimalarial medicines. As many of these outlets may be unregistered, mobile, or recently opened, official listings of these shops and their locations are not typically available. A census approach is therefore implemented, supported by the use of key informant interviews with local officials, local maps, and lists of registered outlets where available.

WHAT IS AN OUTLET CENSUS?

This involves a team of data collectors moving systematically through a defined area in order to identify all outlets that have the potential to sell or distribute antimalarials.

WHAT HAPPENS AFTER AN OUTLET IS IDENTIFIED?

The outlet is screened for availability of malaria medicines or diagnostic testing. Outlets are included in the survey if they have antimalarials or malaria diagnostic tests in stock at the time of survey or in the previous three months. Permission to conduct the interview is obtained from the main provider.

HOW IS INFORMATION ON ANTIMALARIALS AND MRDTS CAPTURED?

Among outlets with antimalarials or/and malaria tests in stock, a full audit of the antimalarials is conducted. Information is recorded for each unique antimalarial and mRDT identified in the outlet.

WHAT INFORMATION IS RECORDED ON THE AUDITS?

An audit sheet is completed for each unique antimalarial and mRDT in stock. The audit sheet captures product information from the product package, including the brand name, the manufacturer, country of manufacture, formulation, and strength. The audit sheet also captures information from the provider, including the amount sold in the last seven days and retail price. If a particular product is available in multiple package sizes, strengths, or formulations, an audit sheet is completed for each unique product.

Comprehensive product information and provider reports on amount distributed and retail price allow for calculating estimates of antimalarial availability, price, and relative market share.



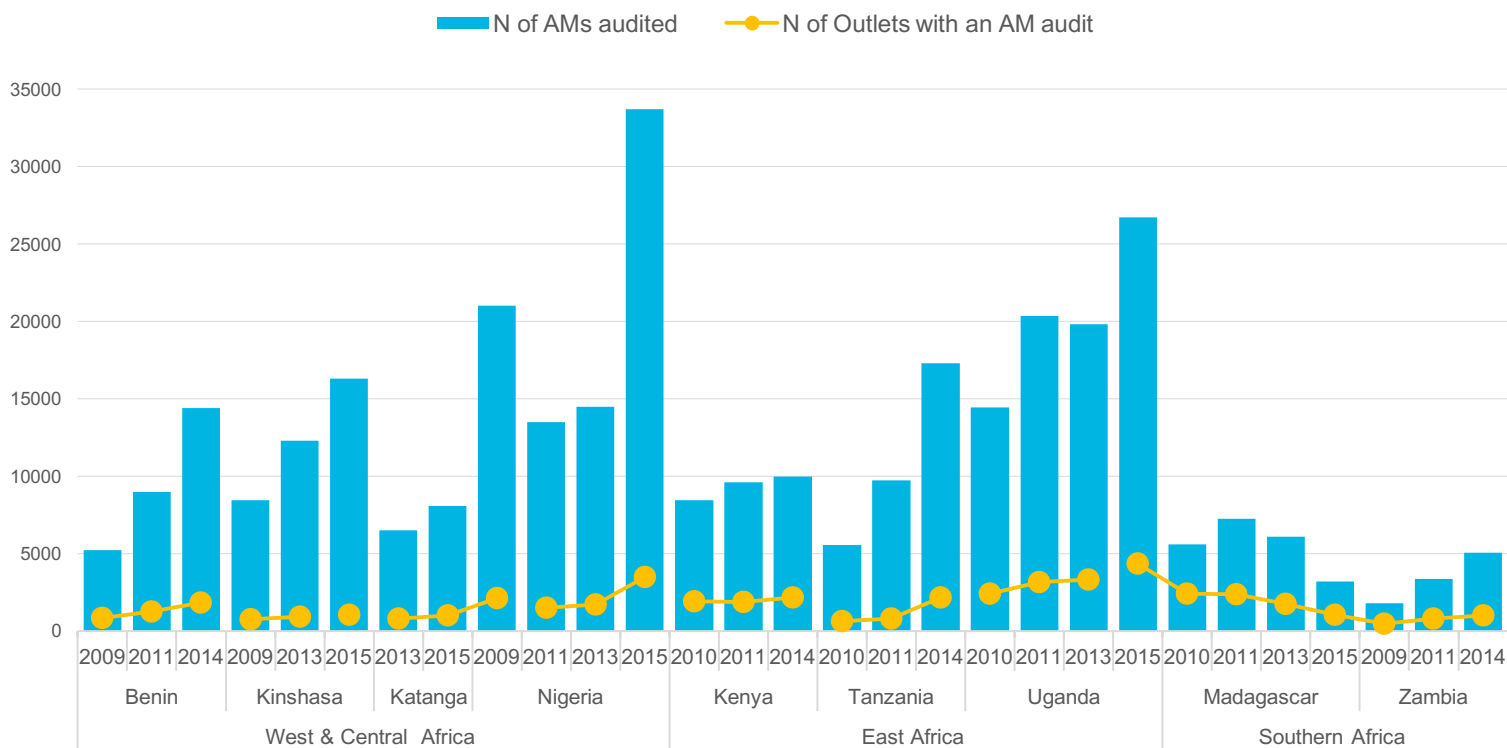
Sample

Between 2009 and 2015 a total of 201,251 outlets across eight countries in sub-Saharan Africa were screened to assess availability of malaria commodities in one of 27 outlet surveys. These screenings were conducted at the national level, with the exception of sub-national surveys in the DRC.

Of all the outlets screened, 49,579 outlets were stocking antimalarials on the day of the survey and an antimalarial audit was completed. The total number of outlets (with the potential to sell or distribute antimalarials) that were screened and the total number of outlets that had antimalarials in stock on the day of survey varied across countries and survey rounds, according to sample size requirements.

		Screened (N)	Antimalarial audit complete/eligible (N/N)	Antimalarials audited (N)
West & Central Africa				
Benin	2009	1,670	844/844	5,233
	2011	2,897	1,239/1,363	8,990
	2014	4,374	1,808/1,920	14,384
DRC, Kinshasa	2009	2,368	766/766	8,437
	2013	3,364	932/962	12,291
	2015	1,168	1,056/1,056	16,287
DRC, Katanga	2013	2,270	771/786	6,493
	2015	1,052	993/993	8,050
Nigeria	2009	5,456	2,113/2,163	21,031
	2011	7,939	1,486/1,509	13,469
	2013	5,148	1,714/1,735	14,469
	2015	13,480	3,470/3,470	33,724
East Africa				
Kenya	2010	13,913	1,888/1,950	8,434
	2011	11,386	1,855/1,871	9,606
	2014	12,676	2,133/2,159	9,970
Tanzania	2010	3,120	624/676	5,544
	2011	3,701	787/787	9,701
	2014	4,945	2,132/2,136	17,307
Uganda	2010	11,153	2,410/2,497	14,437
	2011	16,207	3,138/3,195	20,330
	2013	7,932	3,308/3,333	19,809
	2015	9,438	4,328/4,381	26,700
Southern Africa				
Madagascar	2010	6,769	2,414/2,414	5,587
	2011	10,041	2,371/2,409	7,234
	2013	10,149	1,756/1,765	6,101
	2015	13,481	1,040/1,043	3,170
Zambia	2009	3,840	442/442	1,783
	2011	5,436	781/791	3,355
	2014	5,878	980/984	5,064

TOTAL NUMBER OF ANTIMALARIALS (AM) AUDITED AND TOTAL NUMBER OF OUTLETS WITH ANTIMALARIALS IN STOCK ON THE DAY OF THE SURVEY, WITHIN EACH COUNTRY AND ACROSS SURVEY ROUNDS



Availability

Malaria control programs tasked with ensuring effective treatment responded to non-artemisinin therapy resistance by adopting ACTs as first-line treatments between 2002-2005. This section presents evidence on ACT availability, including quality-assured and non-quality-assured ACT. Results show market improvements over time, but also point to considerable diversity between countries and sectors.



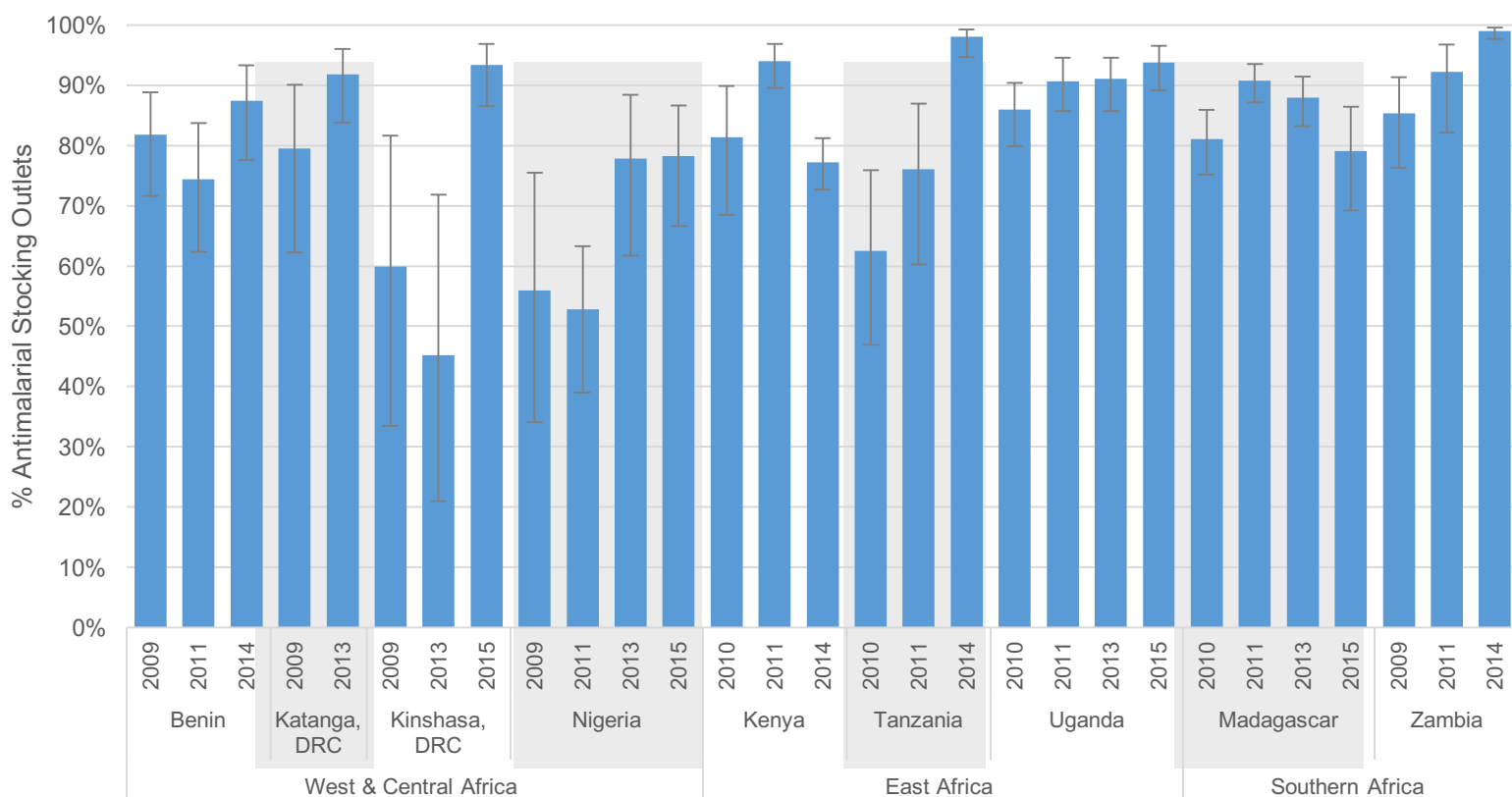
ESPACE MEDICAL



AVAILABILITY OF ACT, AMONG ALL SCREENED PUBLIC HEALTH FACILITIES

At the time of the most recent outlet survey (2014/15), availability of ACT among all screened public health facilities was approximately 90 percent or higher across all countries, with the exceptions of availability at just under 80 percent in Nigeria, Kenya, and Madagascar.

ACT availability within public health facilities has generally increased in recent years, with notable improvements in Nigeria between 2009 (56 percent) and 2015 (78 percent), and in Kinshasa between 2009 (60 percent) and 2015 (93 percent). However, ACT availability has declined in recent years among public health facilities in Kenya between 2011 (94 percent) and 2014 (77 percent), and in Madagascar from approximately 90 percent in 2011 and 2013 to 79 percent in 2015.

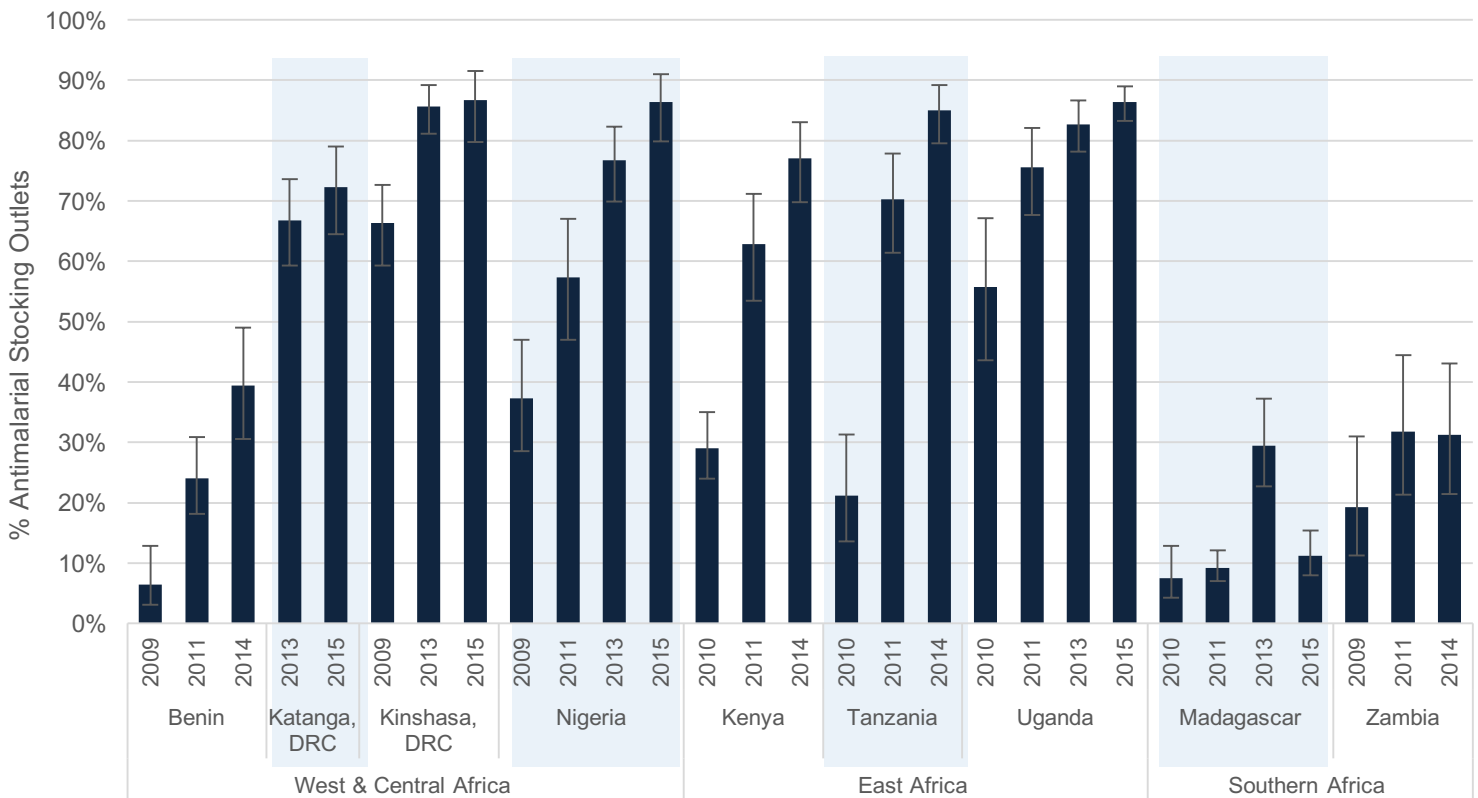


PRIVATE-SECTOR AVAILABILITY OF ACT, AMONG OUTLETS STOCKING ANTIMALARIALS

ACT availability in the private sector increased dramatically in recent years in countries that had a private-sector copayment mechanism administered by the Global Fund. These include Kenya, Nigeria, Tanzania, and Uganda, where ACT availability was 75 to 85 percent during the most recent survey round. Madagascar also had access to the Global Fund copayment mechanism, but private-sector ACT availability has remained low. Private-sector ACT availability has increased incrementally in other countries, including Benin, Katanga, Kinshasa, and Zambia.

How does ACTwatch present availability of different antimalarial categories?

The availability of specific types of antimalarials is restricted to those outlets that have antimalarials in stock. For example, the availability of ACT is measured as the proportion of outlets stocking ACT, among all outlets with at least one antimalarial in stock.



PUBLIC & PRIVATE SECTOR AVAILABILITY OF QUALITY-ASSURED ACT, AMONG OUTLETS STOCKING ANTIMALARIALS

What is quality-assured ACT?

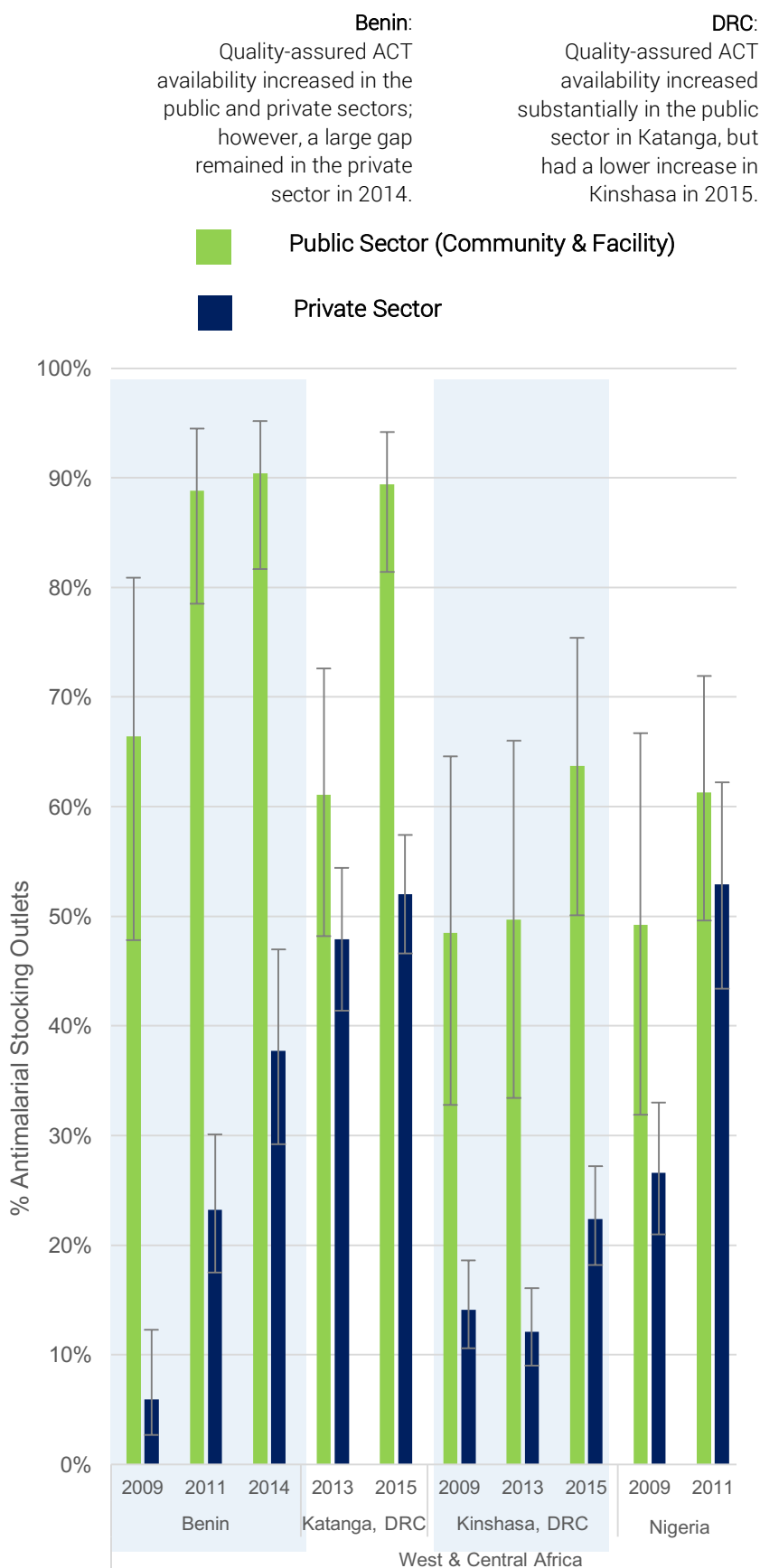
Any ACT: 1) granted WHO prequalification, 2) in compliance with the Global Fund Quality Assurance Policy and appearing on the Global Fund list of approved pharmaceutical products for procurement, or 3) granted regulatory approval by the European Medicines Agency.

What is non-quality-assured ACT?

All ACT suspensions and tablets that are not quality-assured according to the aforementioned criteria.

Among outlets with antimalarials in stock, availability of quality-assured ACT in the public sector was higher than 80 percent during the most recent survey round in all contexts, except Kinshasa and Kenya. High public-sector availability in 2014/15 generally improved over availability levels in recent years.

Availability of quality-assured ACT was generally lower in the private sector compared with the public sector, with the exception of similar levels of public- and private-sector availability in Nigeria. Countries that have had access to the Global Fund private-sector copayment mechanism in recent years show dramatic increases in private-sector availability of quality-assured ACT, including Kenya, Nigeria, Tanzania, and Uganda. Private-sector improvements were less dramatic in other contexts, and substantial gaps persisted in Benin, Katanga, Kinshasa, Madagascar, and Zambia.





Nigeria:

Quality-assured ACT availability increased in the public and private sectors in 2015, and availability was approximately 85 percent in both sectors.

Kenya:

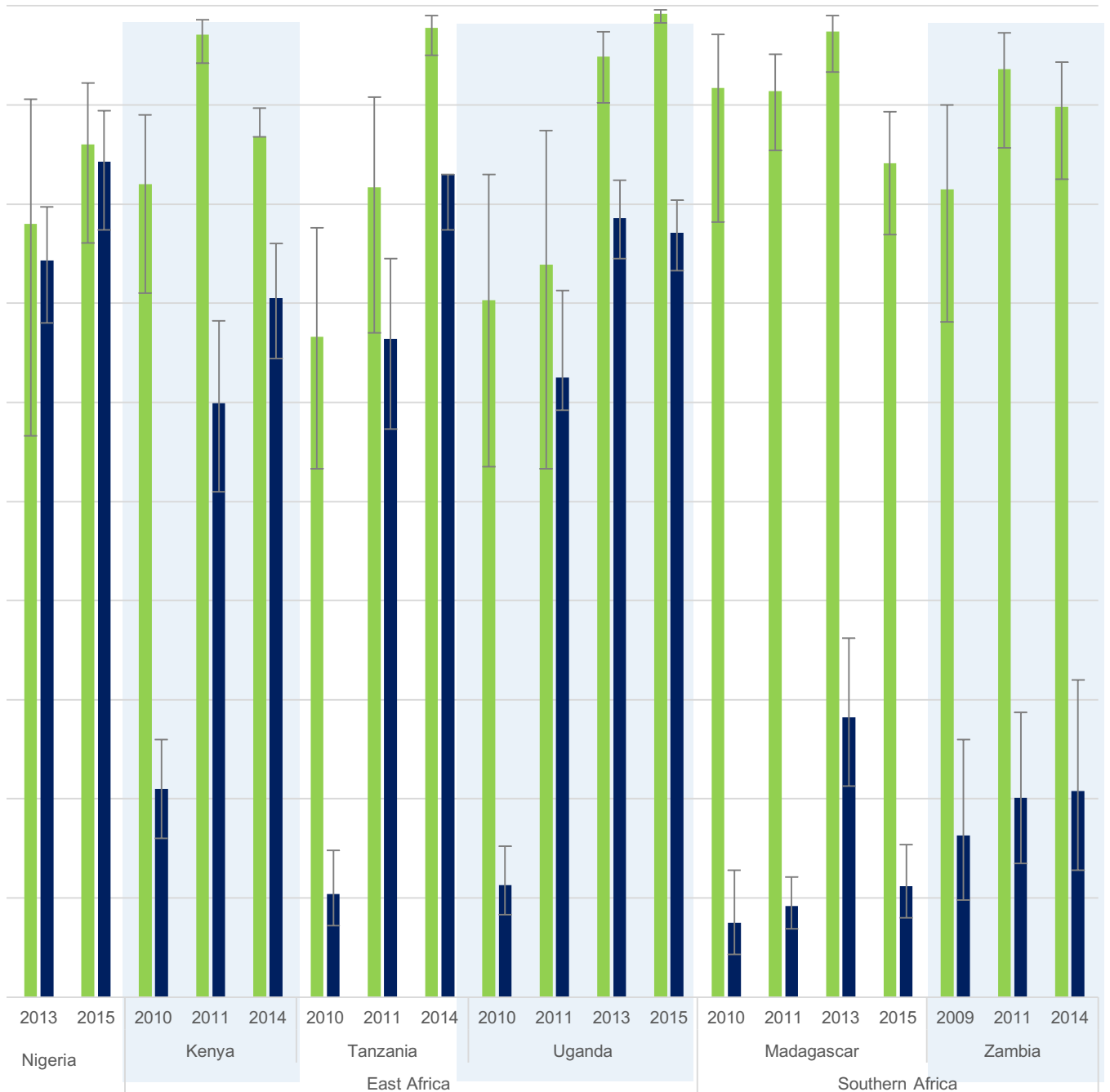
A decline was observed in quality-assured ACT availability in the public sector between 2011 and 2014.

Tanzania and Uganda:

Notable gains in public- and private-sector quality-assured ACT availability were observed over time. Public-sector availability was nearly 100 percent in 2014/15.

Madagascar and Zambia:

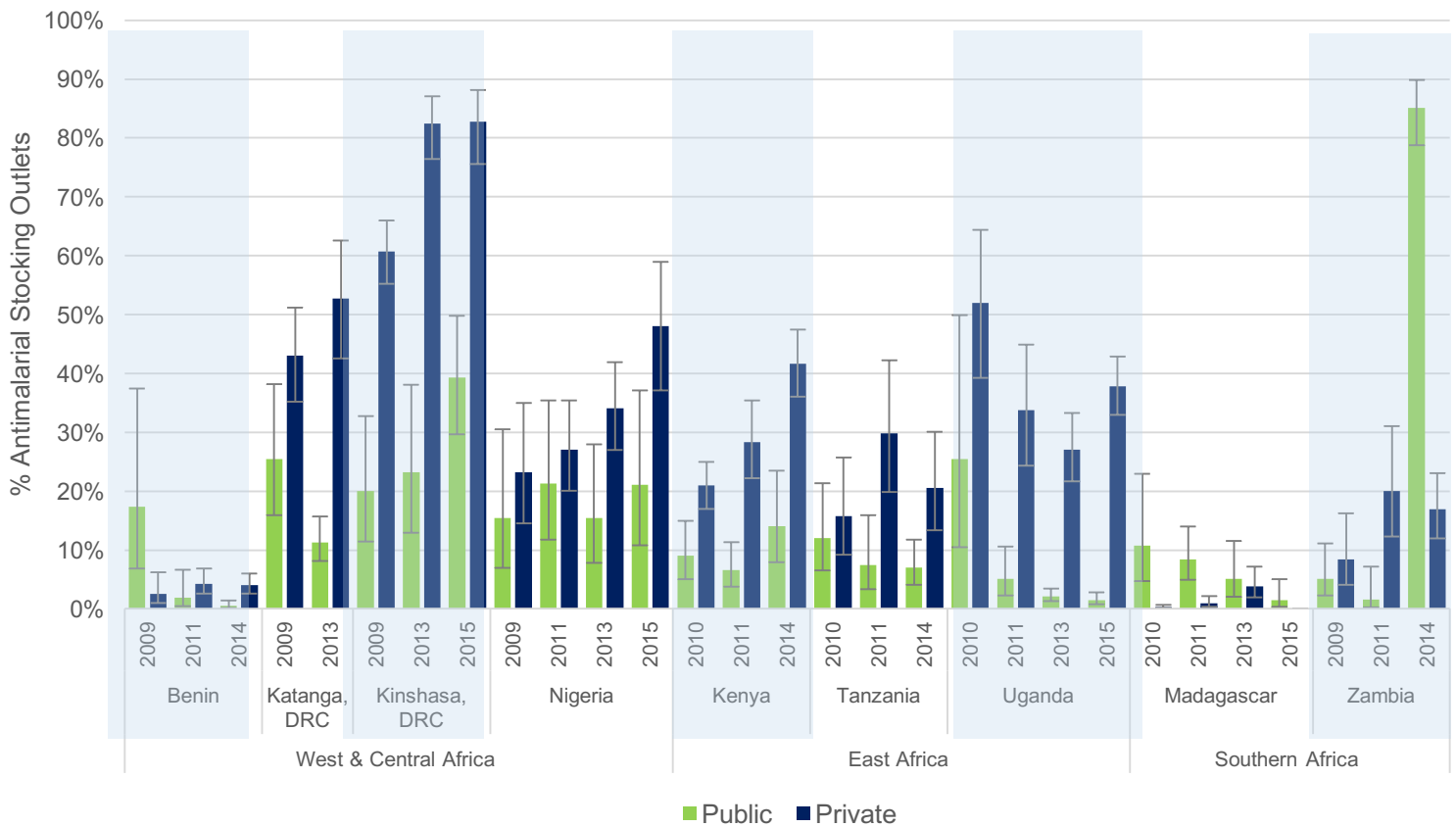
Availability of quality-assured ACT in the private sector was less than 25 percent during the most recent survey round. Public-sector availability remained high over time.



PUBLIC AND PRIVATE SECTOR AVAILABILITY OF NON-QUALITY-ASSURED ACT, AMONG OUTLETS STOCKING ANTIMALARIALS

In the **public sector**, non-quality-assured ACT availability was relatively low across countries and over time, with the exception of Zambia. During the most recent survey, most public-sector outlets were stocking non-quality-assured ACT in Zambia (85 percent). Availability of non-quality-assured ACT has declined among public-sector outlets in many countries, most notably in Uganda from 25 percent in 2010 to 2 percent in 2015. However, data trends suggest maintained or increasing availability in Kinshasa to nearly 40 percent in 2015.

In the **private sector**, availability and distribution of non-quality-assured ACT has emerged in recent years to varying degrees across countries. Increases in non-quality-assured ACT availability were observed in the private sector in Katanga, Kinshasa, Nigeria, Kenya, and Zambia. More than half of private-sector outlets had non-quality-assured ACT in stock in Katanga and Kinshasa in 2015. While availability has declined in Uganda since 2010, nonetheless in 2015, nearly 40 percent of private-sector outlets were stocking non-quality-assured ACT. Availability of non-quality-assured ACT was very low among private-sector outlets in Madagascar and Benin.





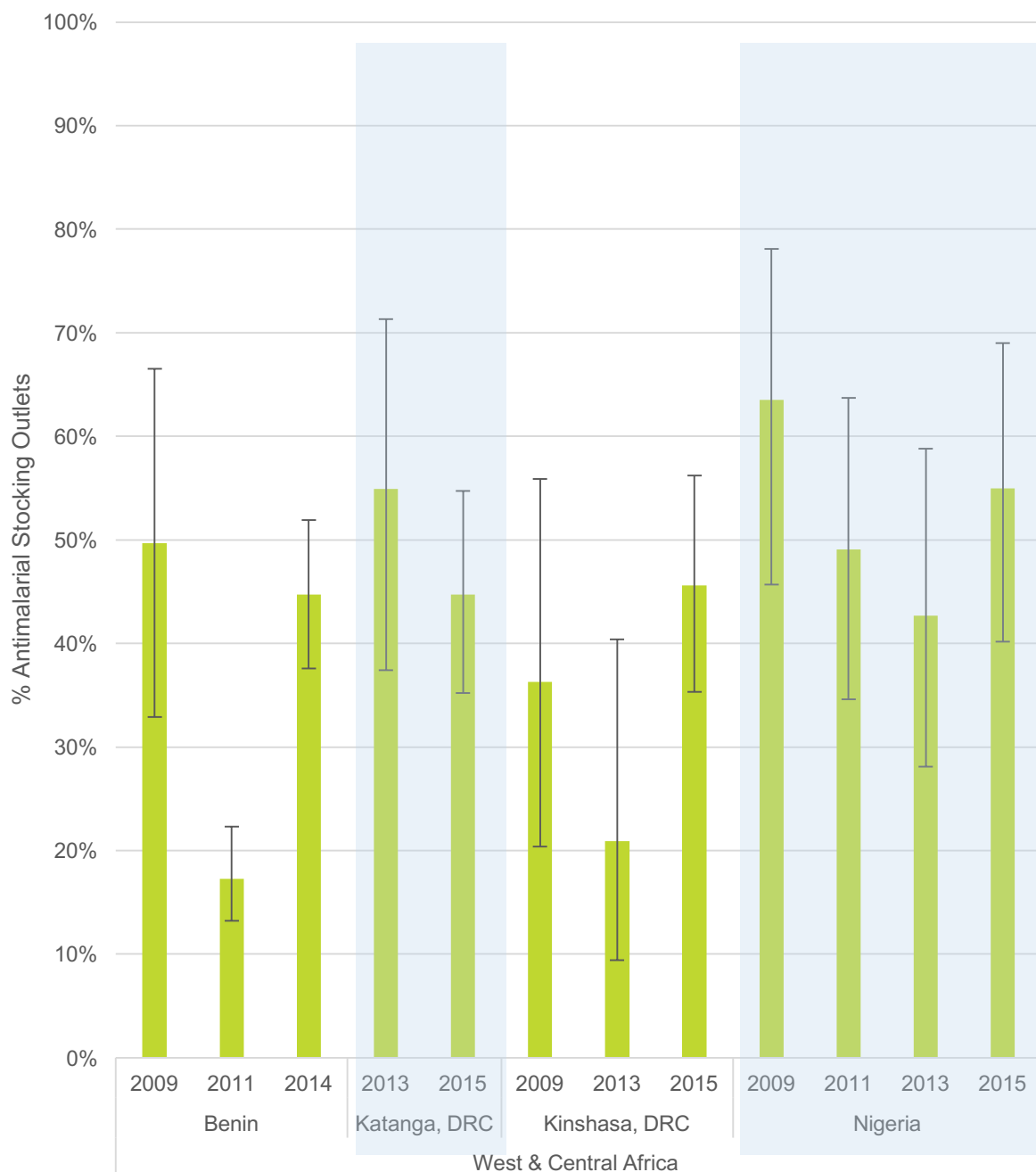
Quality-assured ACT availability increased significantly in recent years, with the exception of persistent low availability in Kinshasa, DRC.

Availability of non-quality-assured ACT has emerged in recent years, but varies across contexts.



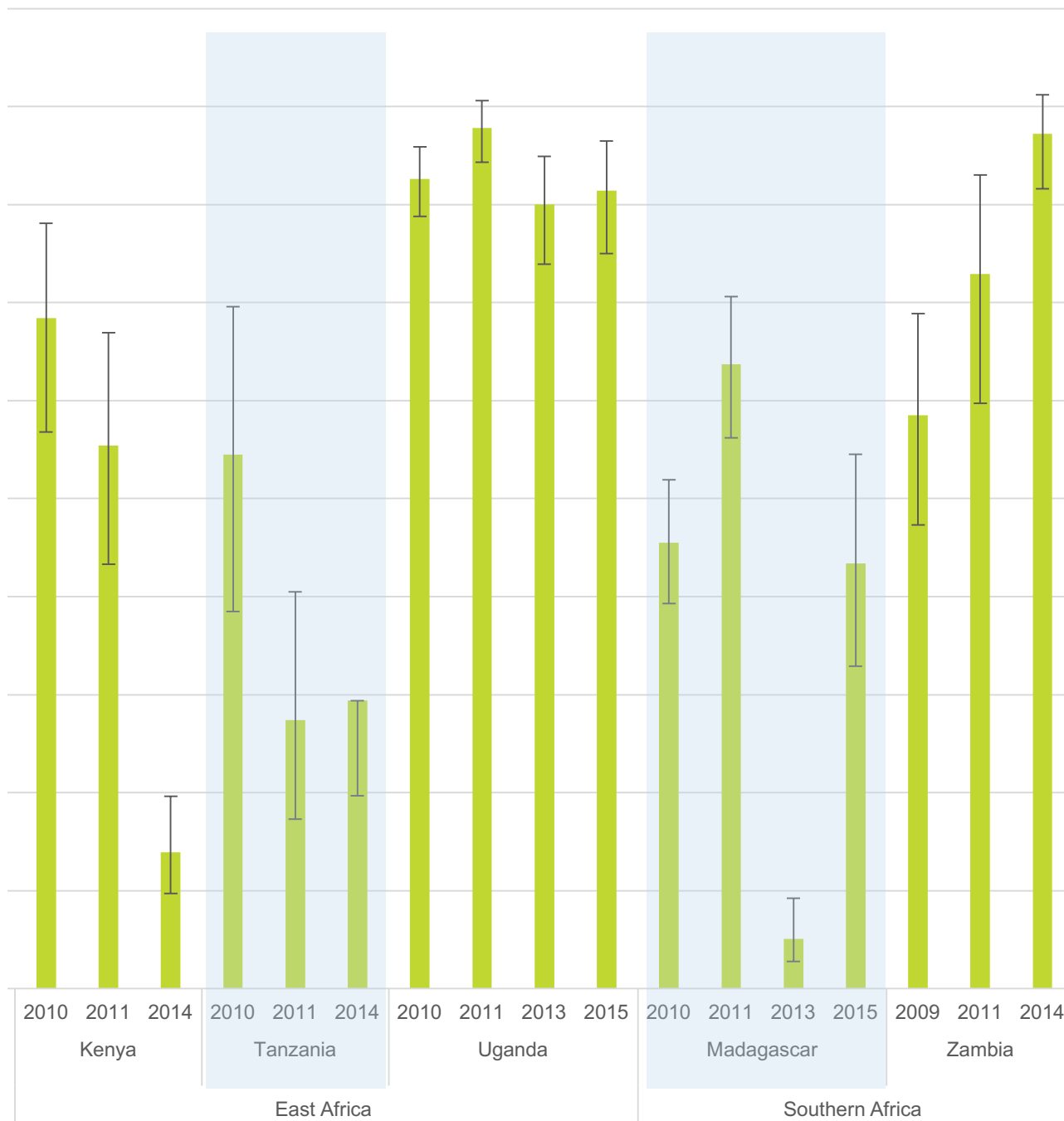
AVAILABILITY OF NON-ARTEMISININ THERAPIES, AMONG OUTLETS STOCKING ANTIMALARIALS: PUBLIC SECTOR

National malaria treatment guidelines across study countries no longer indicate the use of non-artemisinin therapies for malaria case management. Availability and distribution should be limited to the use of sulfadoxine-pyrimethamine (SP) for intermittent preventive therapy (IPTp) during pregnancy and non-oral quinine for severe malaria treatment.

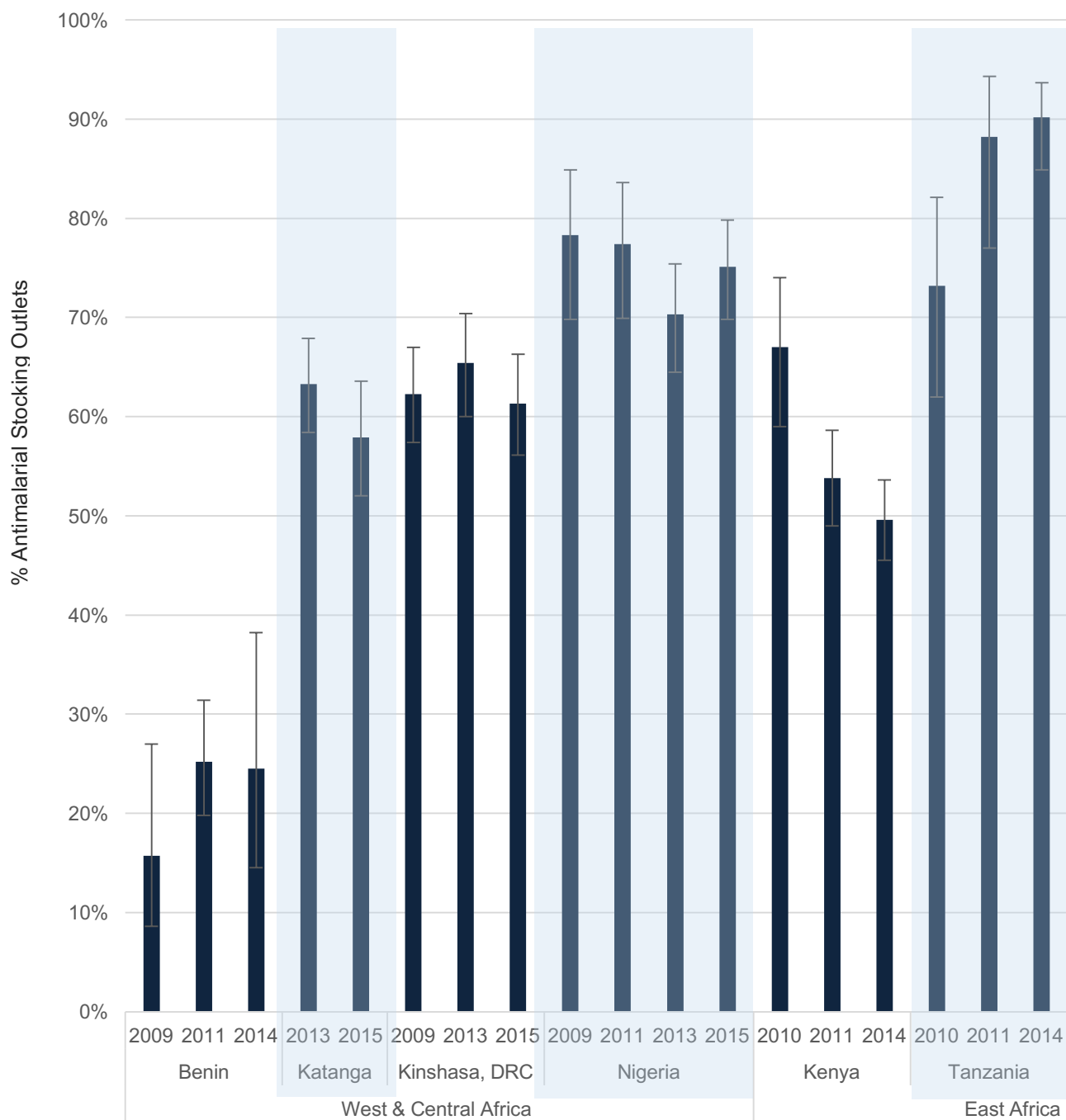


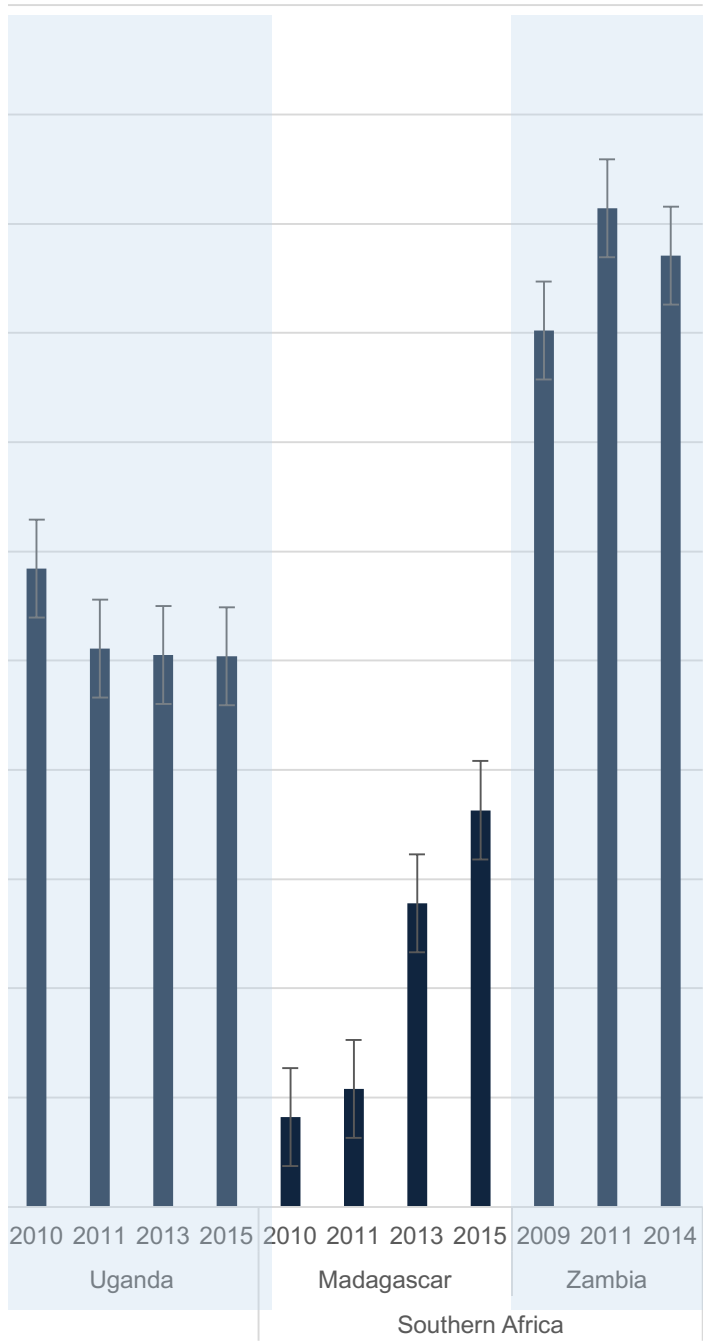
What is non-artemisinin therapy?

Antimalarials that do not contain an artemisinin active ingredient. These include, but are not limited to, SP, quinine, chloroquine, and amodiaquine.



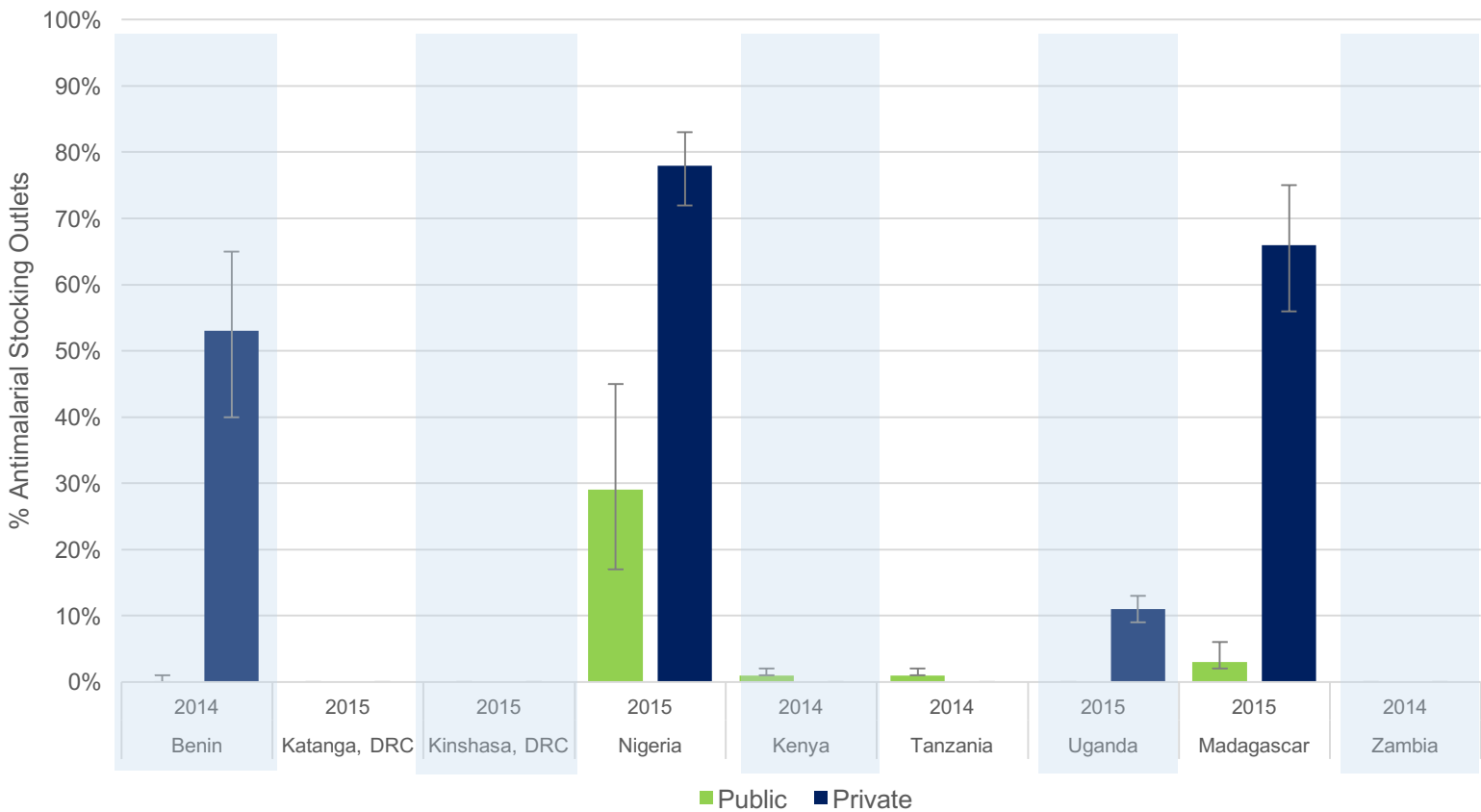
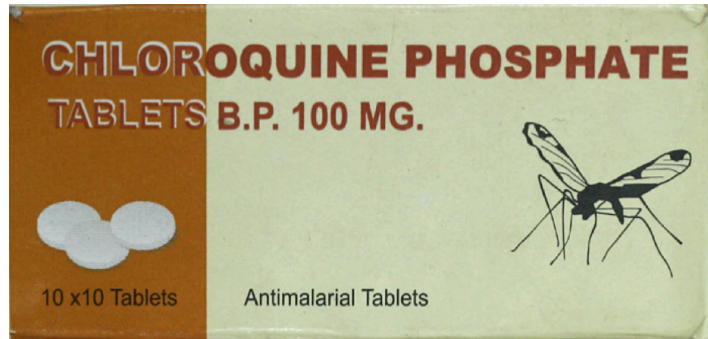
AVAILABILITY OF NON-ARTEMISININ THERAPIES, AMONG OUTLETS STOCKING ANTIMALARIALS: PRIVATE SECTOR





AVAILABILITY OF NON-ARTEMISININ THERAPIES, AMONG OUTLETS STOCKING ANTIMALARIALS: CHLOROQUINE

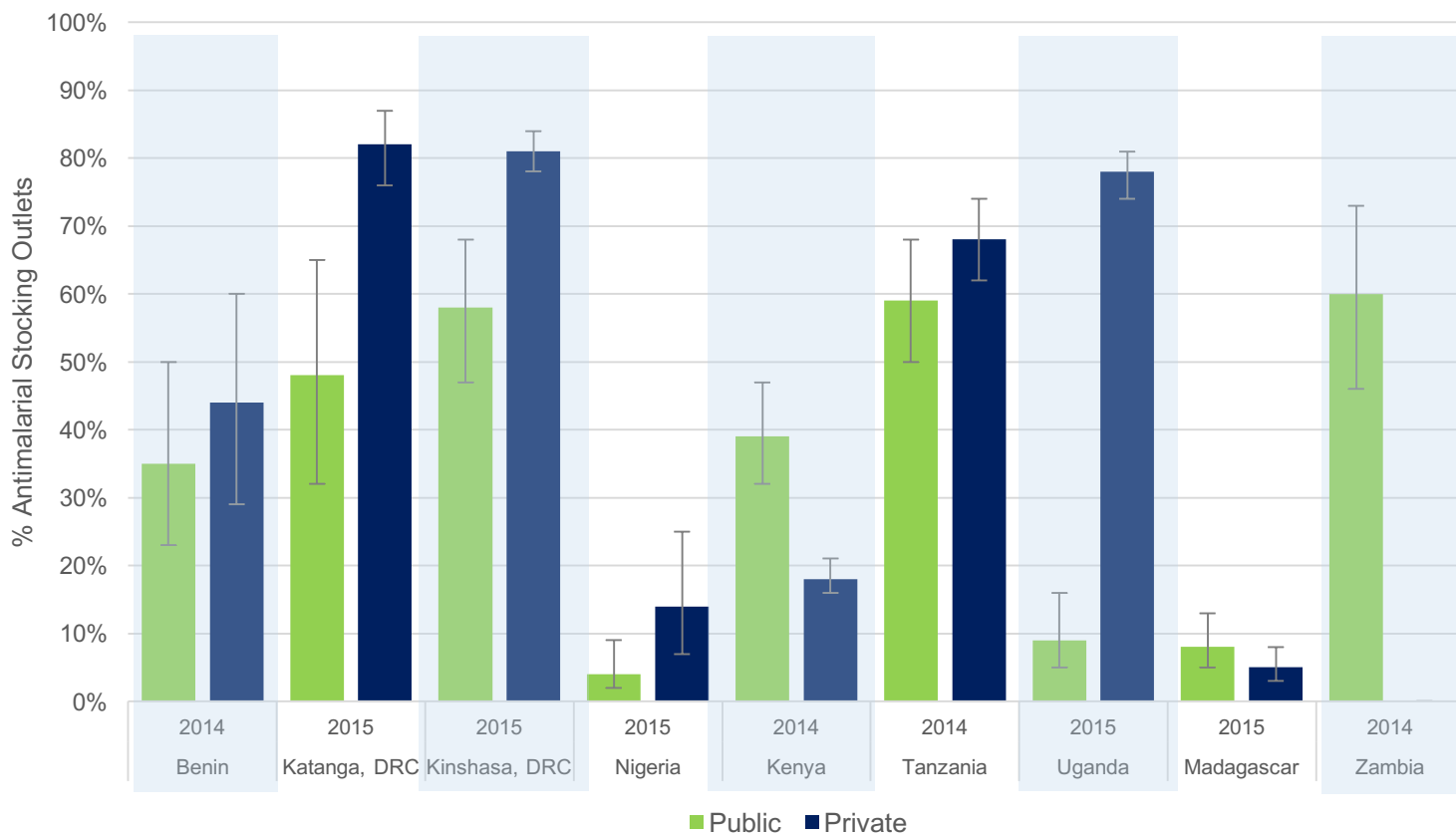
During the most recent survey round (2014/15), chloroquine was generally not available in the DRC, Kenya, Tanzania, and Zambia. However, more than half of antimalarial-stocking private-sector outlets had chloroquine in stock in Benin, Nigeria, and Madagascar. Public-sector availability was low in each country, with the exception of nearly one-third of public outlets stocking chloroquine in Nigeria.



PUBLIC AVAILABILITY OF NON-ARTEMISININ THERAPIES, AMONG OUTLETS STOCKING ANTIMALARIALS: ORAL QUININE

Approximately one-third to over one-half of public-sector outlets were stocking oral quinine in all countries, except Nigeria, Uganda, and Madagascar. Among antimalarial-stocking private-sector outlets, oral quinine was available in approximately half or more outlets in Benin, Kinshasa, Katanga, Tanzania, and Uganda.

Oral quinine, including syrups and tablets, was commonly available in the private sectors of Benin, the DRC, Tanzania, and Uganda.



AVAILABILITY OF SP, AMONG ALL SCREENED PUBLIC HEALTH FACILITIES

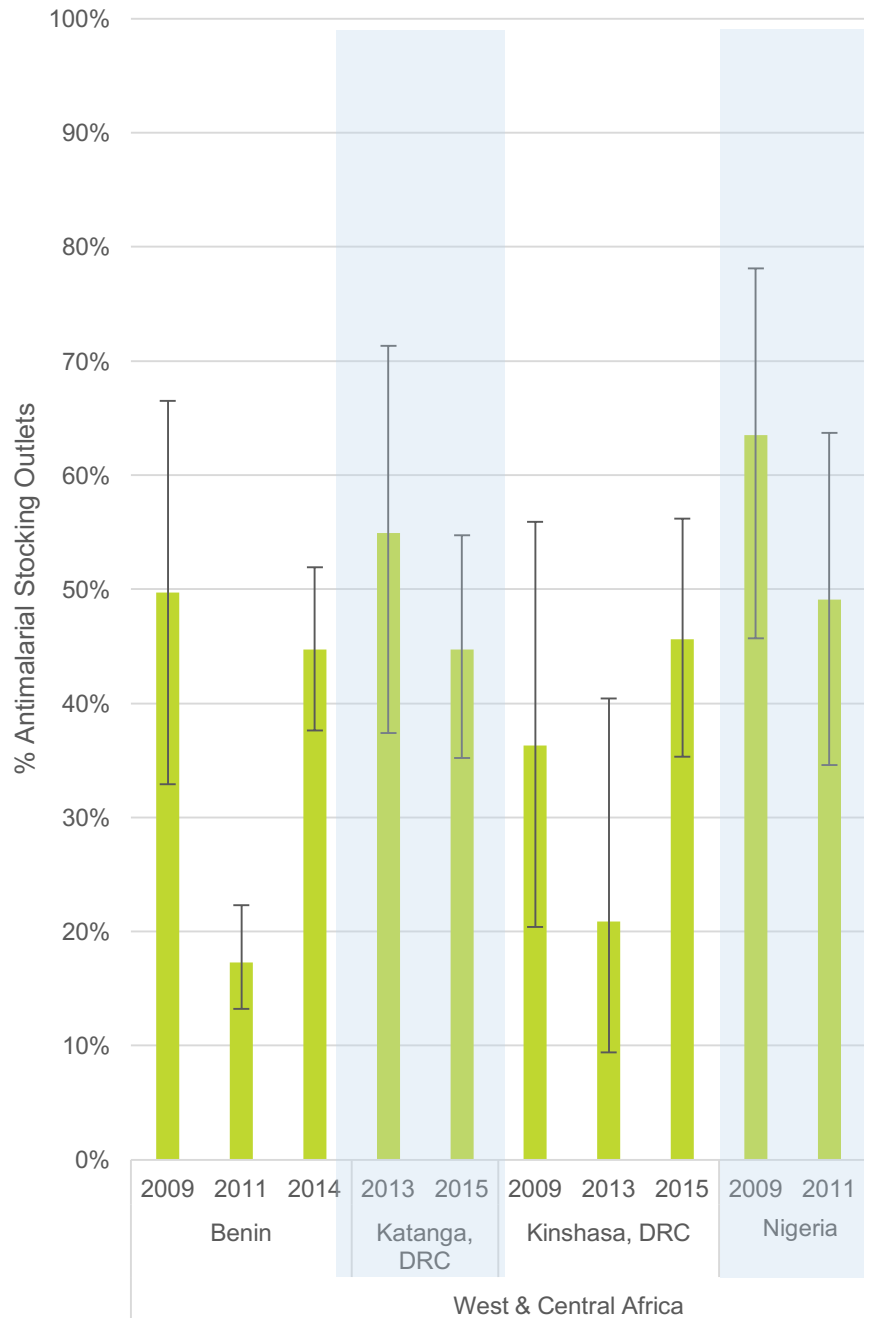
Substantial gaps exist in the availability of SP among public health facilities where national guidelines stipulate use for IPTp.

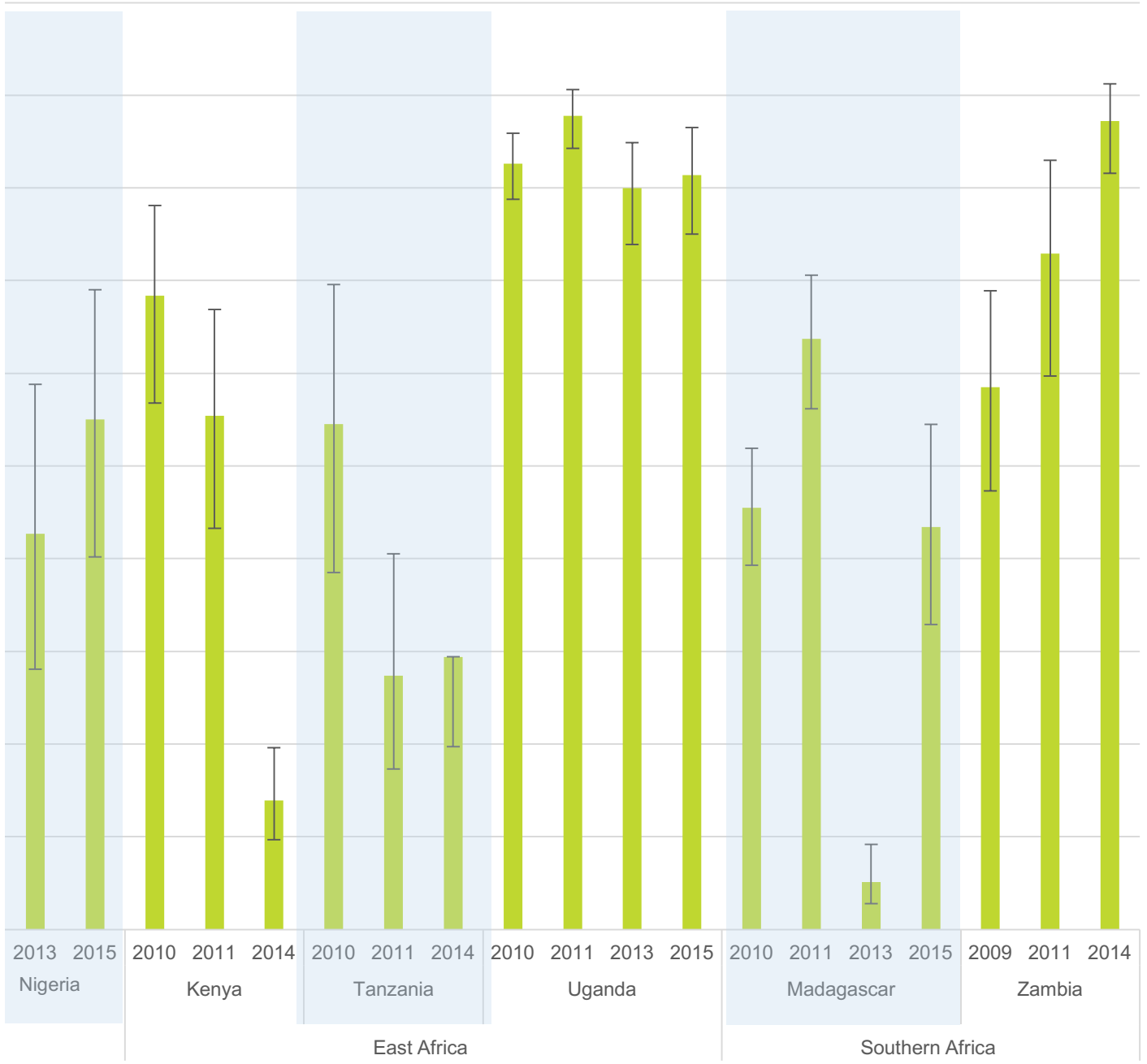
What should SP be used for and where should it be distributed?

SP is still recommended by the WHO and used across Sub-Saharan Africa for IPTp. As such, availability and use of SP should currently be limited to distribution for IPTp at antenatal care (ANC) clinics.

Availability of SP for IPTp was high among public health facilities in Uganda and Zambia (greater than 80 percent). Elsewhere, availability was below 50 percent, with the exception of Nigeria at 55 percent. Levels of SP availability in 2014/15 were in some cases a decline from availability levels.

Low public-sector availability of SP at the national level is concerning because IPTp is an important intervention for pregnant women in malaria-endemic countries. Some countries, including Kenya, have recently identified specific sub-national target areas for IPTp. Declines in readiness for IPTp at the national level in countries like Kenya may be explained by this targeting.





PRIVATE-SECTOR AVAILABILITY OF SP, AMONG OUTLETS STOCKING ANTIMALARIALS

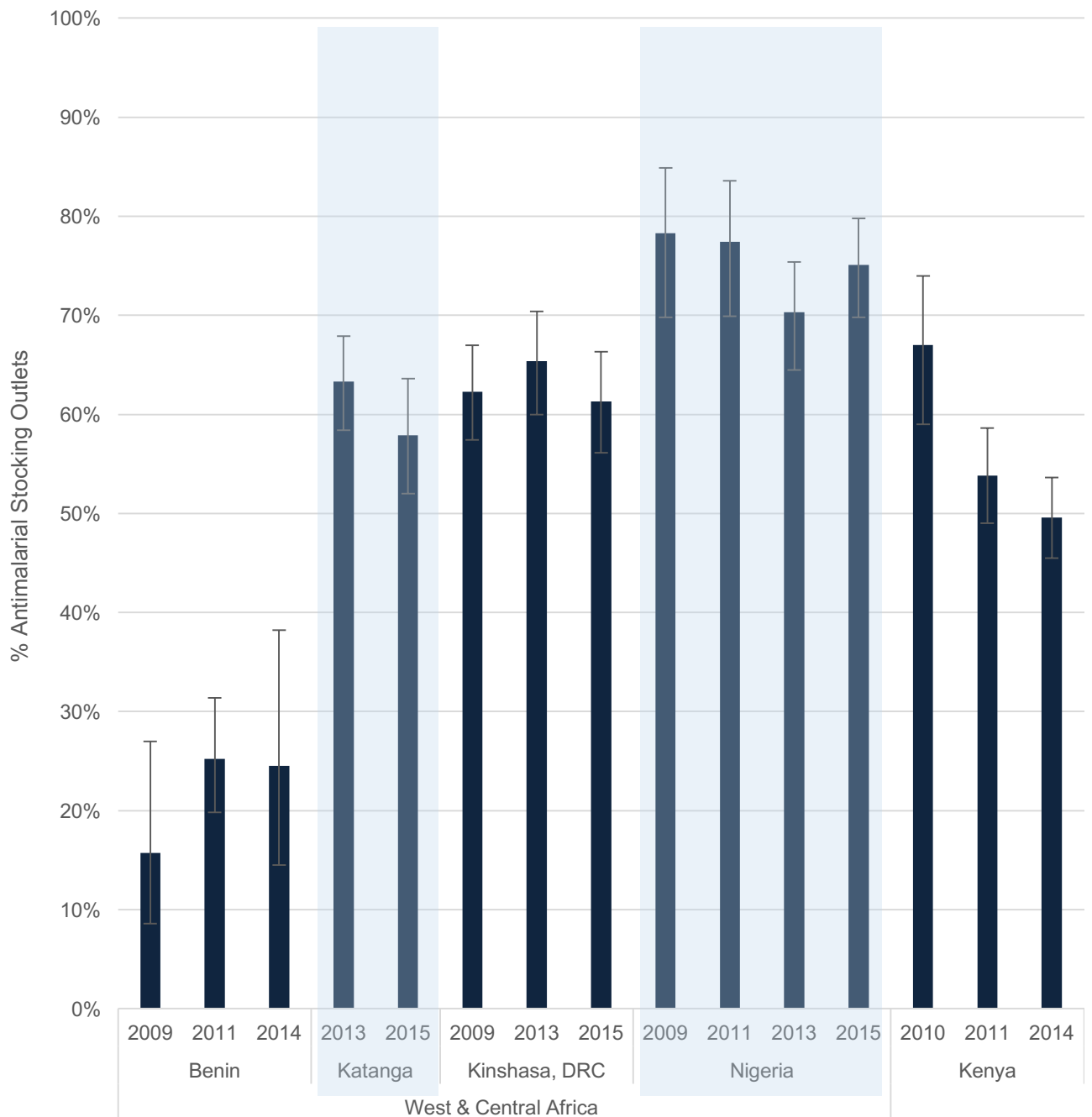
In all contexts, the vast majority of antimalarial-stocking private-sector outlets continue to stock and distribute the non-artemisinin therapy SP.

SP availability in the **private sector** was often higher than in the public sector.

Benin:
1 in 4 private-sector outlets were stocking SP during recent survey rounds.

DRC:
Approximately 60 percent of private-sector outlets were stocking SP in 2015.

Nigeria:
SP availability remained high over time at 70 percent or higher.



During the most recent survey round, half of or more private-sector outlets were stocking SP in all countries, except Benin and Madagascar.

Tanzania:

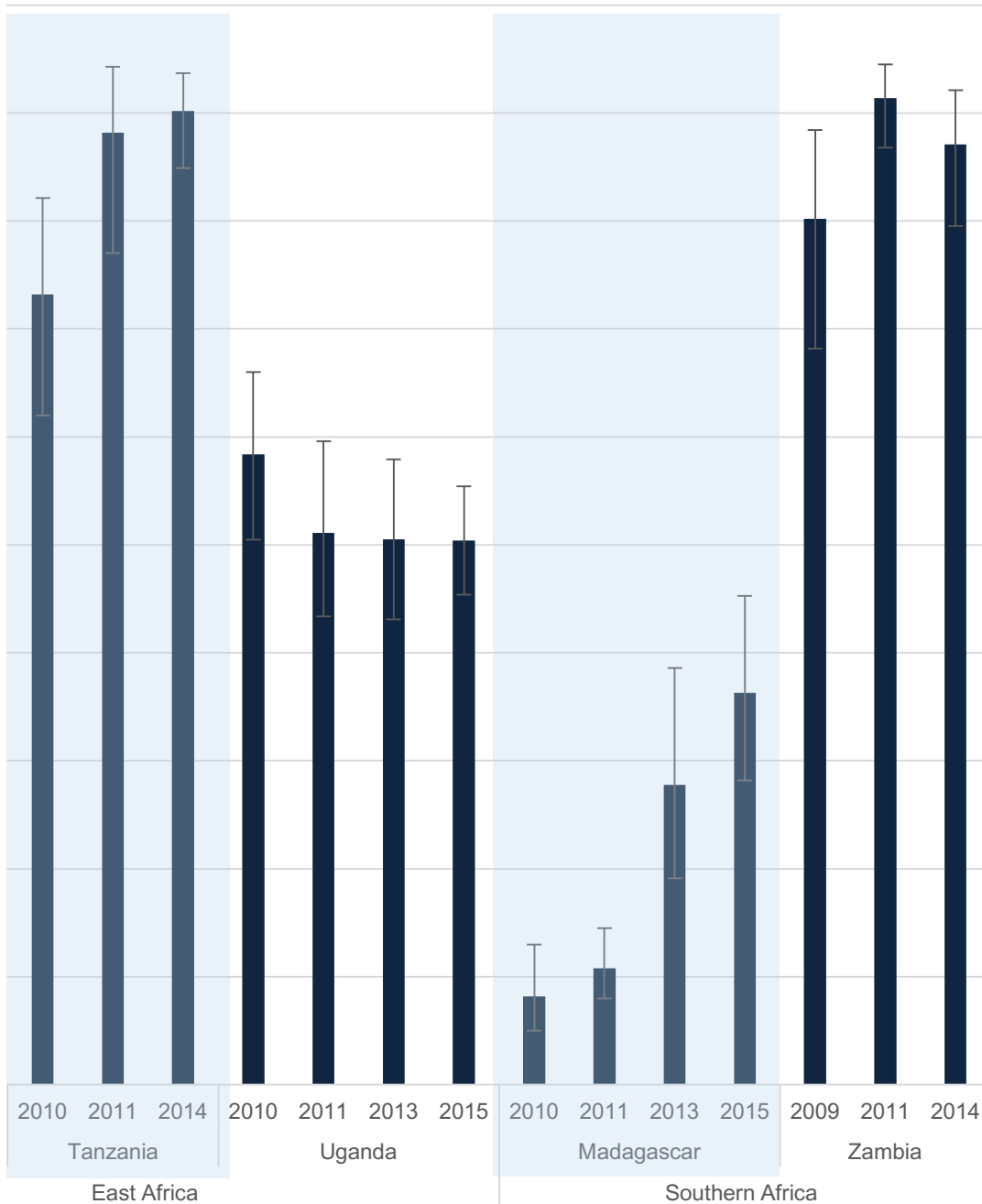
The vast majority of private-sector outlets stock SP.

Kenya and Uganda:

Private-sector SP availability has been around 50 percent in recent survey rounds.

Madagascar:

Increases in private-sector SP availability were observed over time.



WHAT DO WE KNOW ABOUT PRIVATE-SECTOR SP MARKETS?

SP distributed in the private sector is usually available in packages containing three tablets and marketed for use to treat malaria infection in people of all ages.

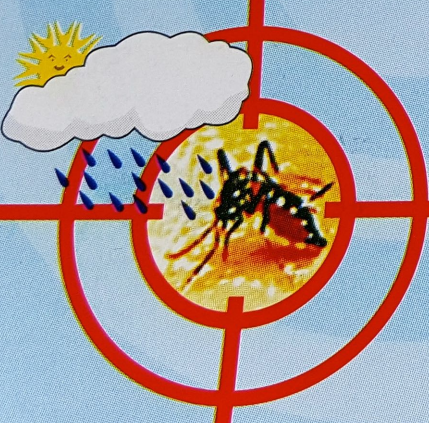
Product audits identified several brands and manufacturers of SP in each country.

Each country has a unique set of leading manufacturers. In some countries, including Uganda, Kenya, Nigeria, and Tanzania, local manufacturing is common. In other countries, products commonly originate from India.

Contre les souches de **paludisme**
chloroquino-résistantes...
Treatment of chloroquine-resistant **malaria**

COMBIMAL

Sulfadoxine 500 mg + Pyrimethamine 25 mg




ajanta

SP instructions specify the number of tablets to be taken according to people of all ages, and treatment is indicated as appropriate medicine for drug-resistant malaria.

ADULTE	
POSOLOGIE	3 comprimés de COMBIMAL
DOSAGE	A single dose of 3 tablets of COMBIMAL

ENFANT / CHILDREN	
POSOLOGIE	
DOSAGE	
< 1 an / year	△
1-3 ans / years	◐
4-8 ans / years	◑
9 - 14 ans / years	◒ ◓
> 14 ans / years	◔ ◕ ◖

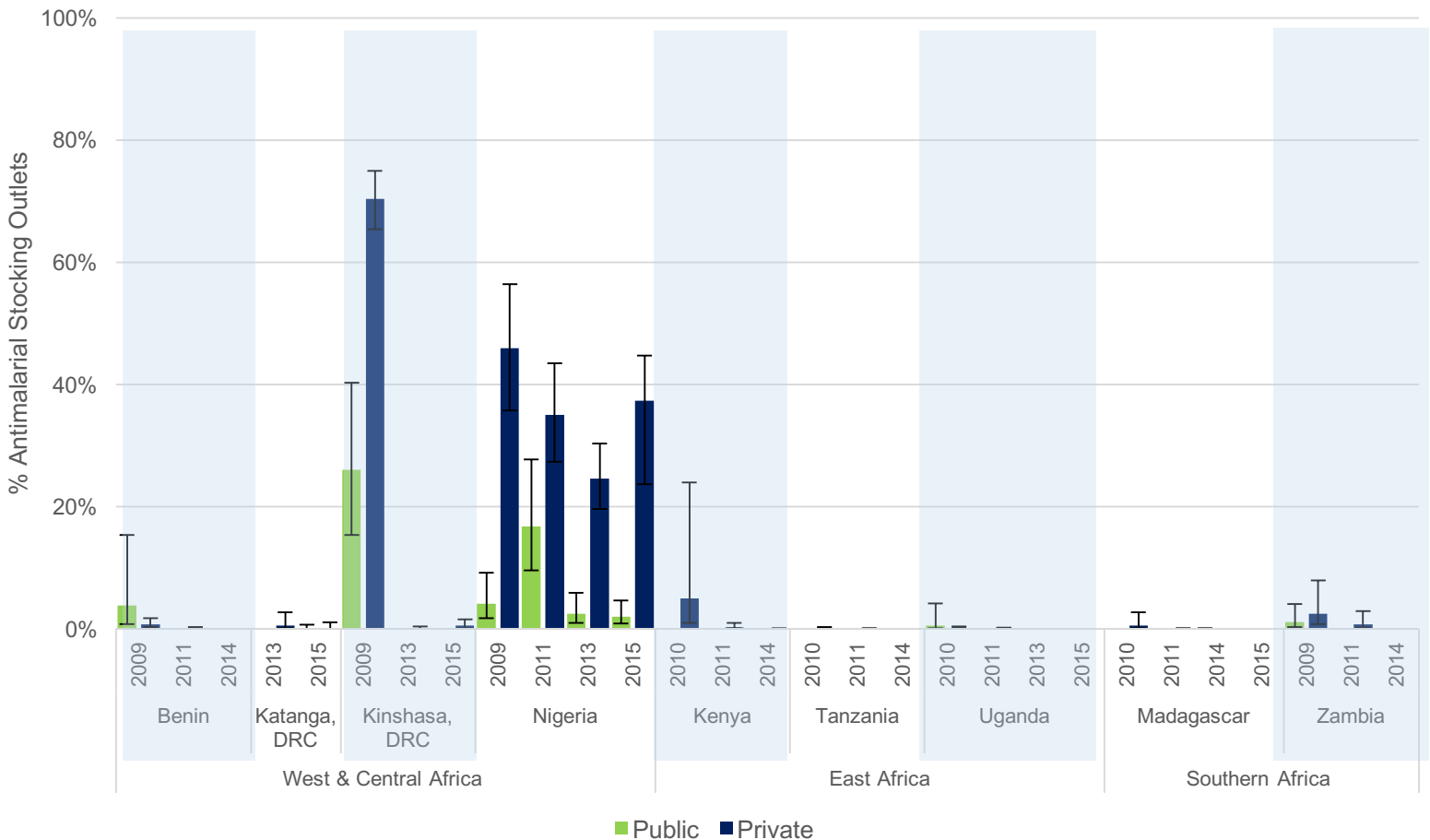
Fabriqué par / Manufactured by :
 **ajanta pharma (mauritius) limited**
MIDA Industrial Building, Goodlands, Mauritius.

PUBLIC- AND PRIVATE-SECTOR AVAILABILITY OF ORAL ARTEMISININ MONOTHERAPY, AMONG OUTLETS STOCKING ANTIMALARIALS

Oral artemisinin monotherapy has been removed from antimalarial markets in most study countries. However, availability persists in Nigeria where in 2015, 37 percent of private antimalarial-stocking outlets had oral artemisinin monotherapies in stock, an increase from 25 percent in 2013. 2015 availability was particularly high in pharmacies (84 percent) and drug stores (39 percent).

What is oral artemisinin monotherapy?

Artemisinin monotherapies include artemether, artesunate, dihydroartemisinin, and arteether. Oral artemisinin monotherapies are available in tablet and suspension formulations. Non-oral artemisinin monotherapy includes powder and liquid injections as well as suppositories. Oral artemisinin monotherapy is banned in all study countries, because its use can fuel the spread of artemisinin drug resistance. Non-oral artemisinin monotherapy medicines are typically indicated for management of severe malaria.





1 in 3:

Number of private-sector antimalarial-stocking outlets with oral artemisinin monotherapy available.

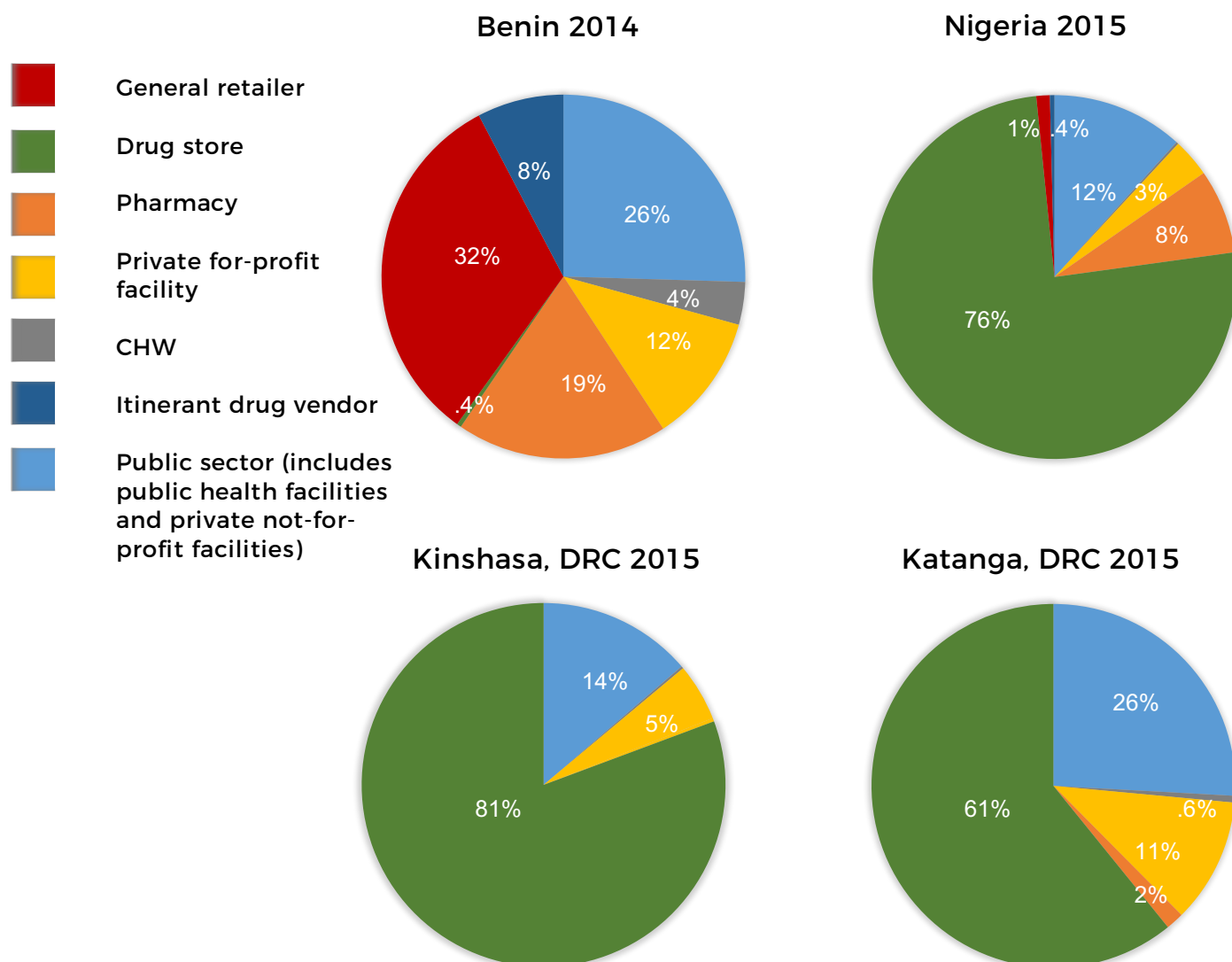
(Nigeria, 2015).

Antimalarial markets

This section summarizes the role of the public and private sectors and specific outlet types for antimalarial distribution by showing the relative volumes of antimalarial drugs that were distributed by each outlet type.

Benin's antimalarial market is diverse with multiple private-sector outlet types contributing to antimalarial distribution, including general retail outlets such as market stalls and mobile vendors, as well as pharmacies and private health facilities.

In contrast, in Kinshasa and Katanga, DRC and Nigeria, drugs stores were the most common source of antimalarials. Drug store relative market share was 80 percent in both Kinshasa, DRC and Nigeria and 60 percent in Katanga, DRC.

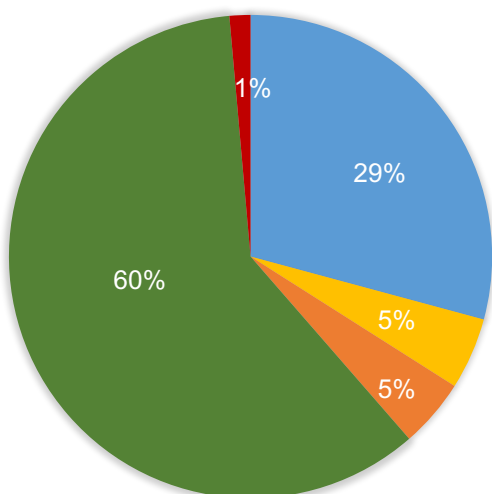


The private sector plays a major role in the distribution of antimalarials in each country. However, the type of private-sector outlets that dominate the market vary across countries.

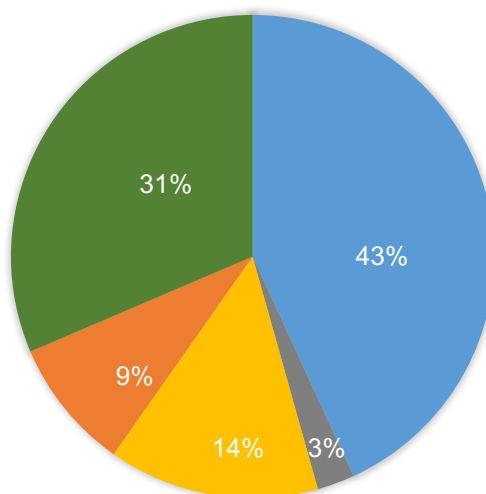
Public health facilities and CHWs accounted for nearly half of all antimalarial distribution in Uganda in 2015. Private-sector market distribution was dominated by drug stores (nearly one-third of the total market share) as well as pharmacies and private for-profit health facilities. General retail outlets no longer stock or distribute antimalarials in Uganda. The private sector was responsible for more than 70 percent of all antimalarial distribution in Kenya and Tanzania during the most recent outlet survey.

In Tanzania, drug stores distributed more than half of all antimalarials. These included accredited drug dispensing outlets known as *ADDOs*, as well as other drug stores known as *duka la dawa baridi*. Pharmacies accounted for relatively low market share in Tanzania. In contrast, registered pharmacies accounted for 40 percent of antimalarial distribution in Kenya and drug stores (non-registered pharmacies) for an additional 30 percent. In most countries, general retailers do not play a substantial role in antimalarial distribution. However, in Madagascar they were responsible for 13 percent of all antimalarial distribution. Drug stores accounted for one-third of antimalarial distribution.

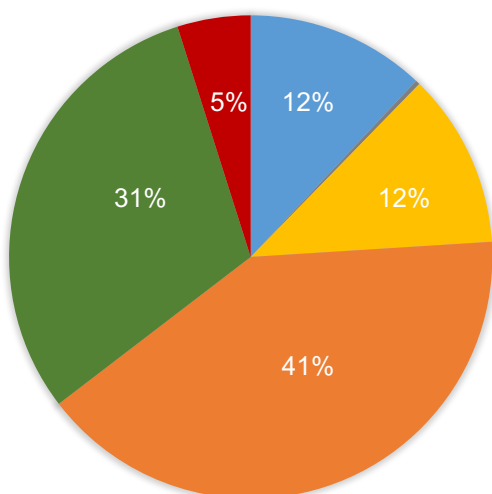
Tanzania 2013



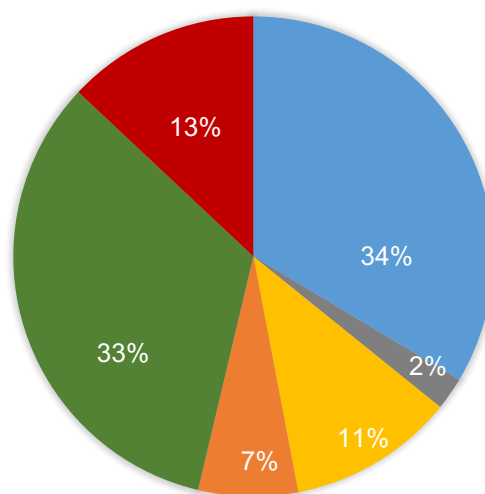
Uganda 2015



Kenya 2014



Madagascar 2015

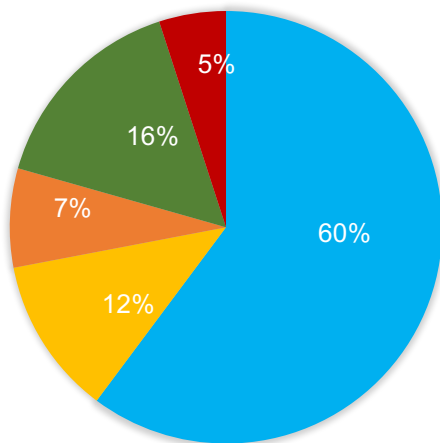


HOW MARKETS SHIFT: TRENDS OVER TIME IN ANTIMALARIAL MARKETS IN ZAMBIA

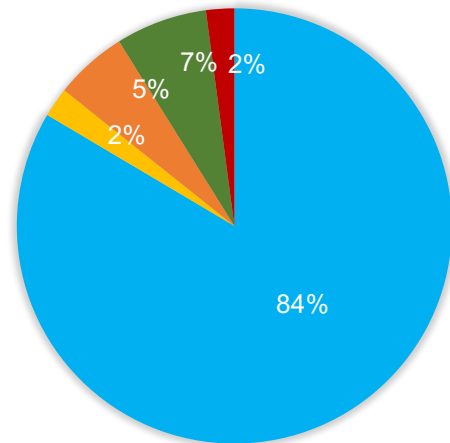


In Zambia, 60 percent of antimalarials were distributed through the public sector in 2009, and by 2014 this had increased to over 80 percent, demonstrating the importance of the public sector as a source of treatment in Zambia and differentiating Zambia from other study countries. Most antimalarials distributed in the private sector in Zambia were sold through drug stores and general retailers.

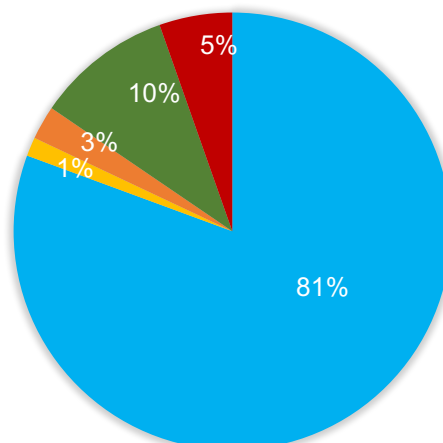
Zambia 2009



Zambia 2011



Zambia 2014



Market share

This section summarizes relative market share for different categories of antimalarials in the public and private sector. Trends show market share for quality-assured ACT has changed over time relative to market share for non-artemisinin therapies and artemisinin monotherapies across different country contexts.



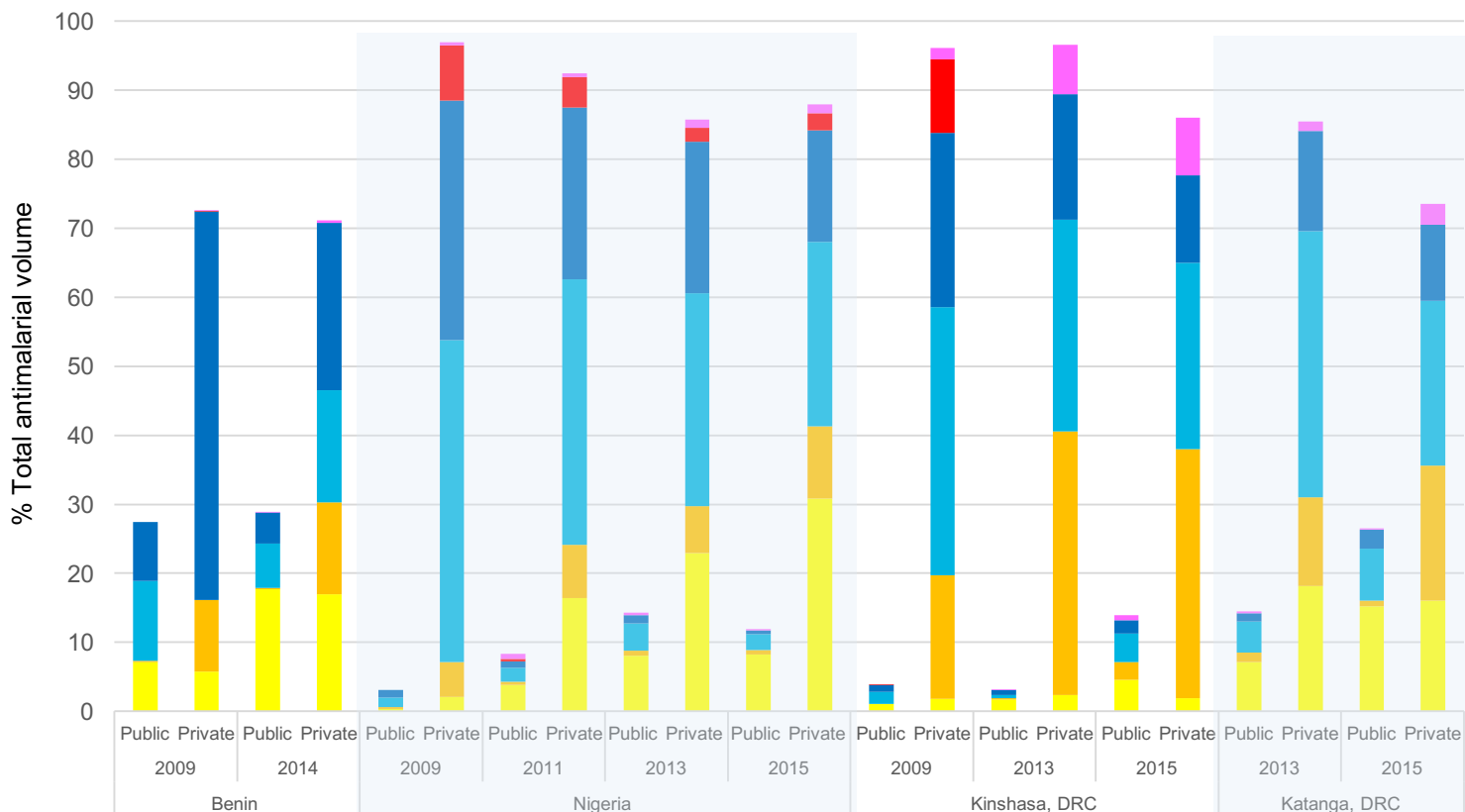
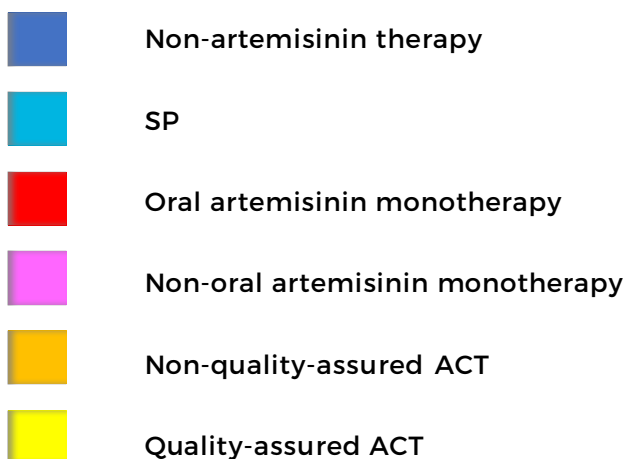
Trend data illustrate how markets are constantly evolving in response to policy changes, national strategies to improve malaria case management, and consumer demand.

PUBLIC- AND PRIVATE-SECTOR MARKET SHARE IN WEST AND CENTRAL AFRICA

BENIN, NIGERIA, AND DRC

Distribution of oral artemisinin monotherapy no longer occurs in most study countries; however, ongoing private-sector distribution was observed in Nigeria in 2015.

Across countries in West and Central Africa, the **private sector** accounted for more than 70 percent of all antimalarial distribution. While ACT market share has increased over time in each country, approximately half or more of the antimalarial market share in 2014/15 was accounted for by non-artemisinin therapies, including SP, chloroquine, and quinine. Distribution of non-quality-assured ACTs is of concern in this region, including in Nigeria and the DRC. In Kinshasa, approximately 40 percent of all antimalarials distributed in 2015 were non-quality-assured ACTs.

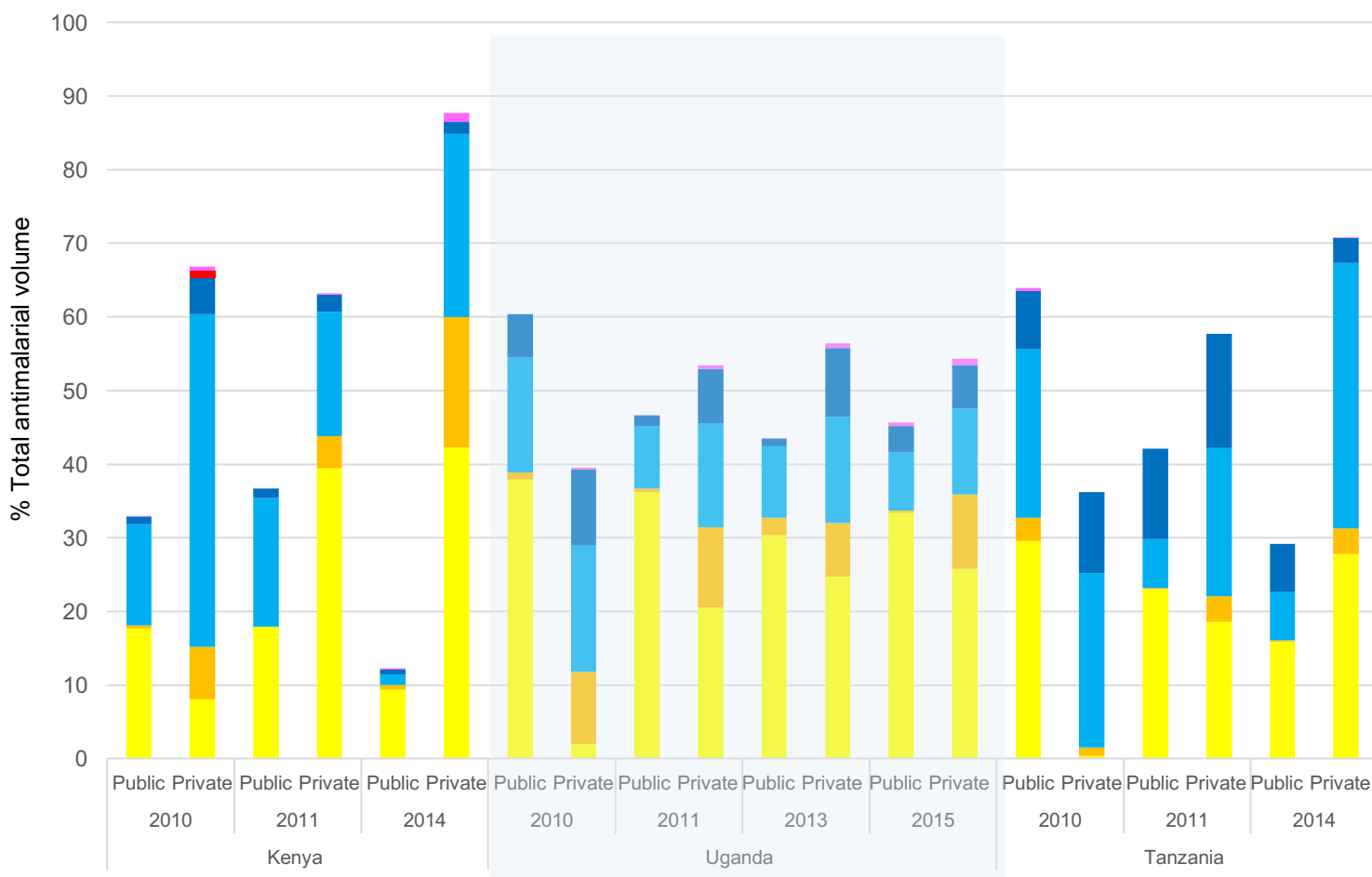


KENYA, UGANDA, AND TANZANIA

Market share for quality-assured ACT has increased in most countries in recent years with particularly notable increases observed in countries with access to the Global Fund’s private-sector copayment mechanism.

Market share for quality-assured ACT increased over time in all three East African countries. Quality-assured ACTs captured more than half of the antimalarial market share in Kenya (52 percent) and Uganda (59 percent), and 44 percent of the market share in Tanzania. However, non-artemisinin therapies, particularly SP, were still commonly distributed in 2014/15. In Tanzania, more than one-third of all antimalarials distributed in 2014 were SP courses distributed by the private sector. One in four antimalarials distributed in Kenya in 2014 were SP courses delivered by the private sector. Furthermore, one in five antimalarials distributed in Kenya were non-quality-assured ACT.

The antimalarial market share for the private sector has increased in Kenya, Uganda, and Tanzania over time. During the most recent survey round, private-sector market share ranged from 54 percent in Uganda to 88 percent in Kenya.

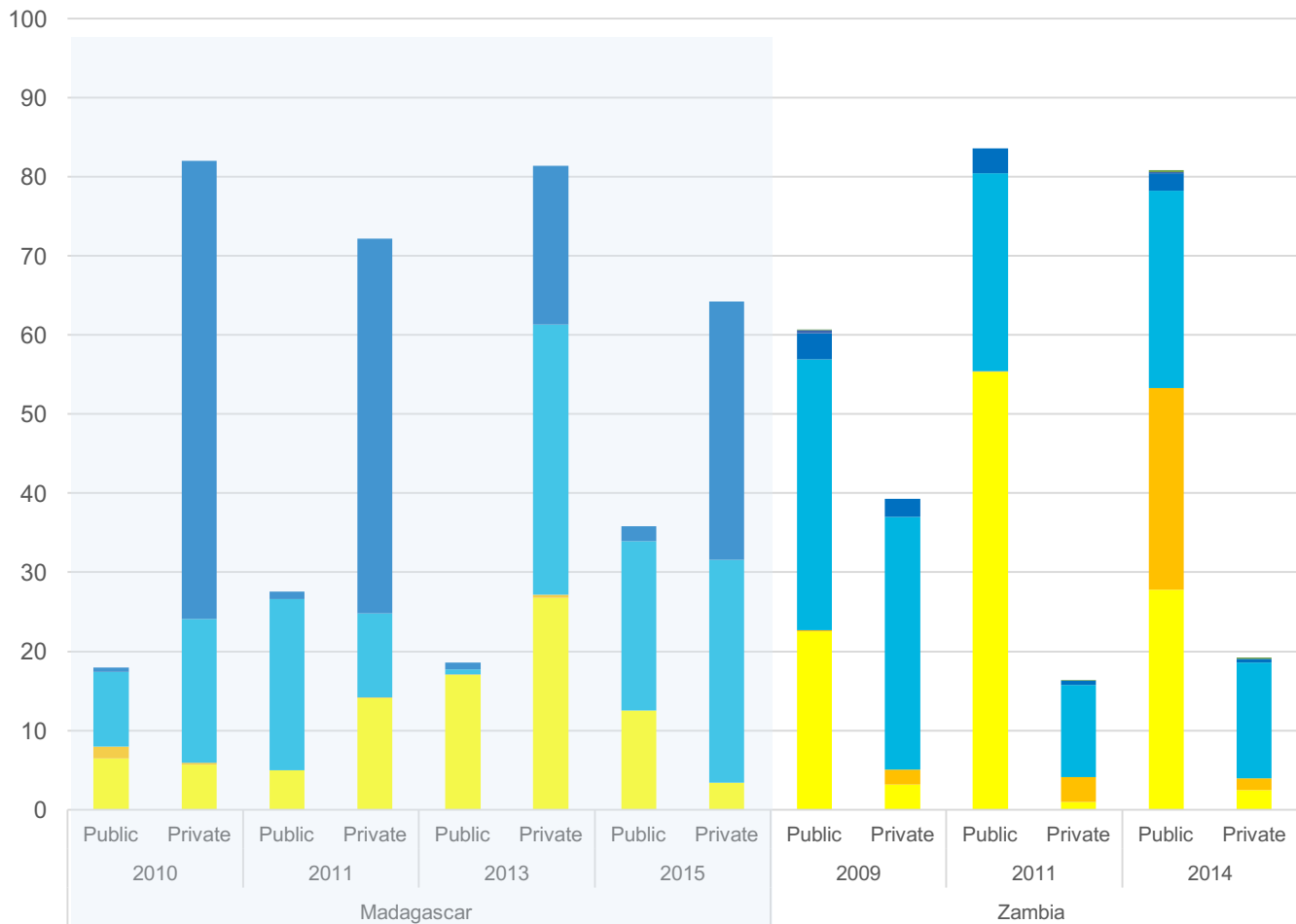


MADAGASCAR AND ZAMBIA

In both Zambia and Madagascar, non-artemisinin therapies, including chloroquine and SP, were the most commonly distributed antimalarials within the private sector.

In Madagascar, quality-assured ACT market share increased from 12 percent in 2010, to 21 percent in 2011, to 44 percent in 2014, but decreased to 16 percent in 2015. Distribution of the non-artemisinin therapy, chloroquine, was common in 2010. Chloroquine distribution decreased in 2011 and 2013, but increased in 2015. Distribution of SP in the private sector also has increased over time. In 2015, 84 percent of all antimalarials distributed were non-artemisinin therapies, including chloroquine and SP.

The antimalarial market in Zambia is a unique market in comparison with other countries in sub-Saharan Africa because most antimalarials in Zambia are distributed by the public sector. The majority of antimalarials distributed in Zambia in 2011 and 2014 were ACT moving through the public sector. In 2014, about half of ACT moving through the public sector were non-quality-assured ACT (artemether-lumefantrine tablets without WHO pre-qualification). SP accounted for 40 percent of the total market share and was the most commonly distributed antimalarial in the private sector.



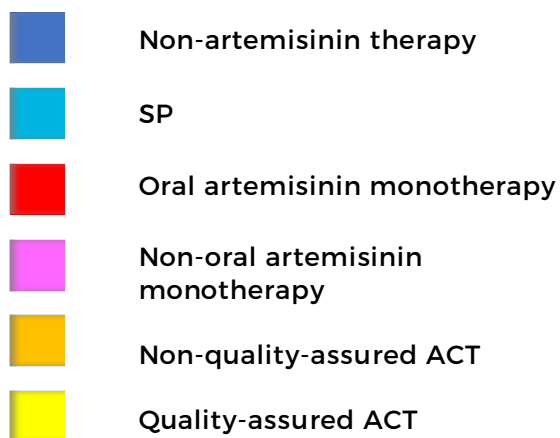
EXPLORING THE PRIVATE-SECTOR MARKET SHARE: COUNTRY EXAMPLES

Market share for antimalarial and outlet types highlight the contributions of different private-sector outlet types to the distribution of quality-assured ACT and other antimalarials that are not recommended for case management.

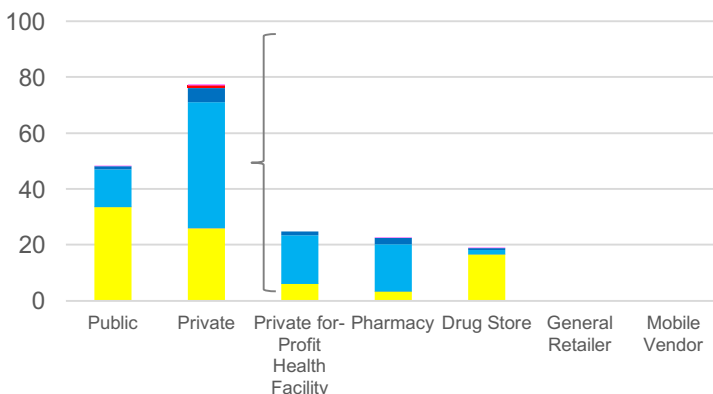
In Uganda, Benin, and Kenya, the private sector distributed more than half of all antimalarials. This distribution is shared by different outlet types.

Distribution of non-artemisinin therapies could be addressed in Benin by focusing on general retailers and mobile vendors. In Kenya, pharmacies and drug stores were responsible for the majority of SP distribution. In Uganda, most of the non-artemisinin distribution was among drug stores.

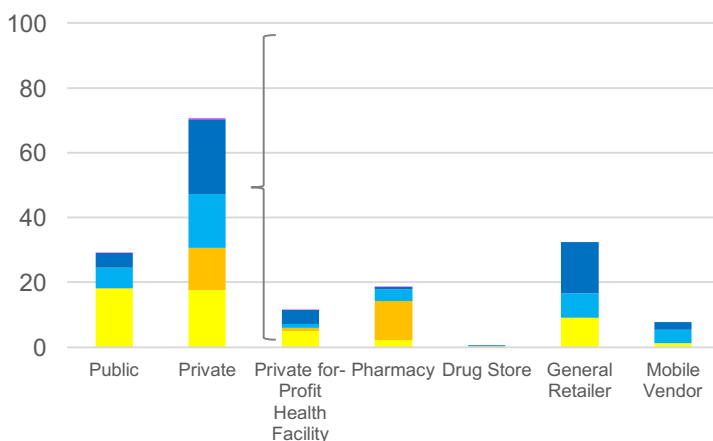
The distribution of non-quality-assured ACT could be addressed in Benin and Kenya by focusing on pharmacies. In Uganda, non-quality assured ACTs were distributed by facilities, pharmacies, and drug stores.



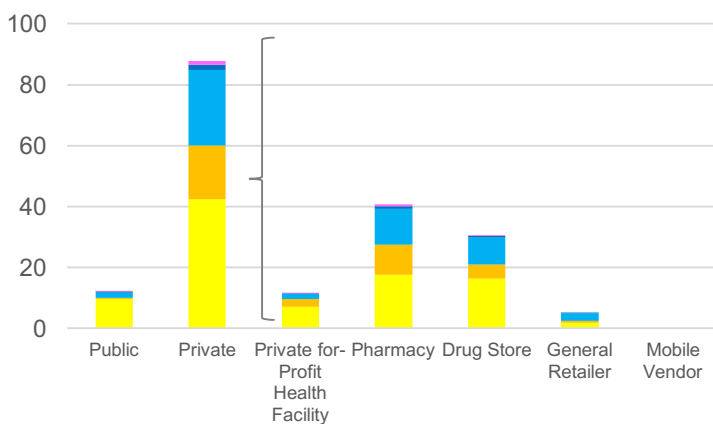
Uganda 2015



Benin 2014



Kenya 2014



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Market share for quality-assured ACT relative to other antimalarials has increased over time due to increased relative distribution in both the public and private sector. Gaps in uptake of quality-assured ACT are present to varying degrees in each country.

Addressing persistent private-sector distribution of non-quality-assured ACT and non-artemisinin therapies requires working with different types of outlets according to each country context.

Malaria blood testing

In 2012, the WHO launched the Test, Treat, Track initiative recommending confirmatory testing prior to antimalarial treatment. National malaria control programs (NMCPs) across sub-Saharan Africa subsequently aligned national guidelines with this recommendation. Strategies to scale up testing using malaria rapid diagnostic tests (mRDTs) were introduced by NMCPs. This section summarizes availability of malaria blood testing, including malaria microscopy and rapid diagnostic testing, and market share for diagnostics.



PUBLIC- AND PRIVATE-SECTOR AVAILABILITY OF MALARIA DIAGNOISTICS, AMONG OUTLETS STOCKING ANTIMALARIALS

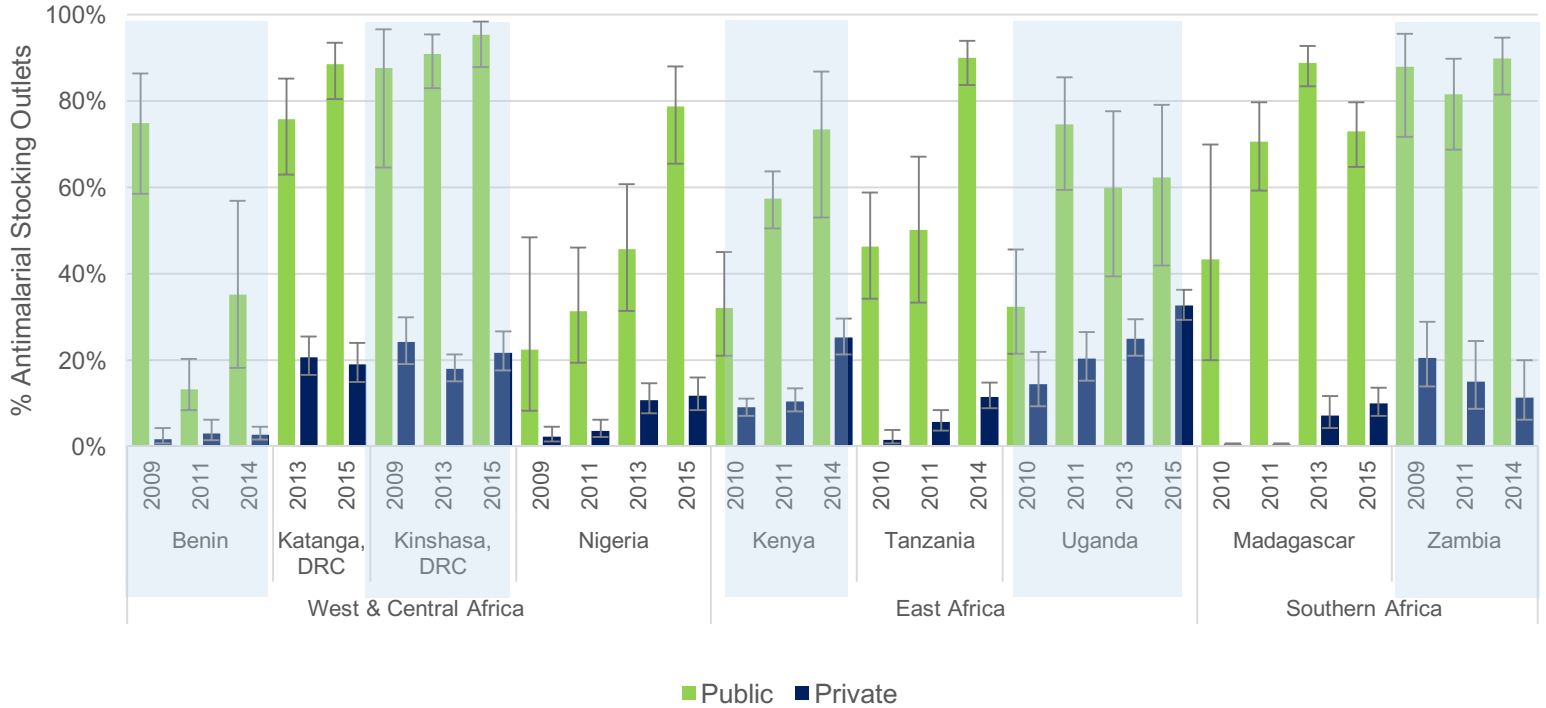
In the antimalarial-stocking private sector, mRDT availability was less than 35 percent across all countries, suggesting challenges to implementing confirmatory testing prior to treatment for people seeking fever treatment in the private sector.

Each outlet was assessed for the availability of mRDT or malaria microscopy. In the public sector, availability of any type of diagnostic test varied considerably by context, and changes were observed over time. Availability of malaria diagnostic testing was high in 2014/15 (90 percent or higher) in antimalarial-stocking public outlets in Katanga and Kinshasa, DRC; Tanzania; and Zambia. In Tanzania, 2014 availability at 90 percent was a significant increase from 50 percent in 2011. Improvements were also observed across survey rounds in the public sector in Kenya and Nigeria. Gaps in public-sector availability of confirmatory testing persist in Benin where only one-third of public-sector outlets had testing in 2014, and Uganda, where 2015 availability was 62 percent. However, the low overall public-sector availability in Uganda is due to a large number of antimalarial-stocking CHWs, only 58 percent of who were stocking mRDTs. Confirmatory testing in public health facilities in Uganda was 95 percent.

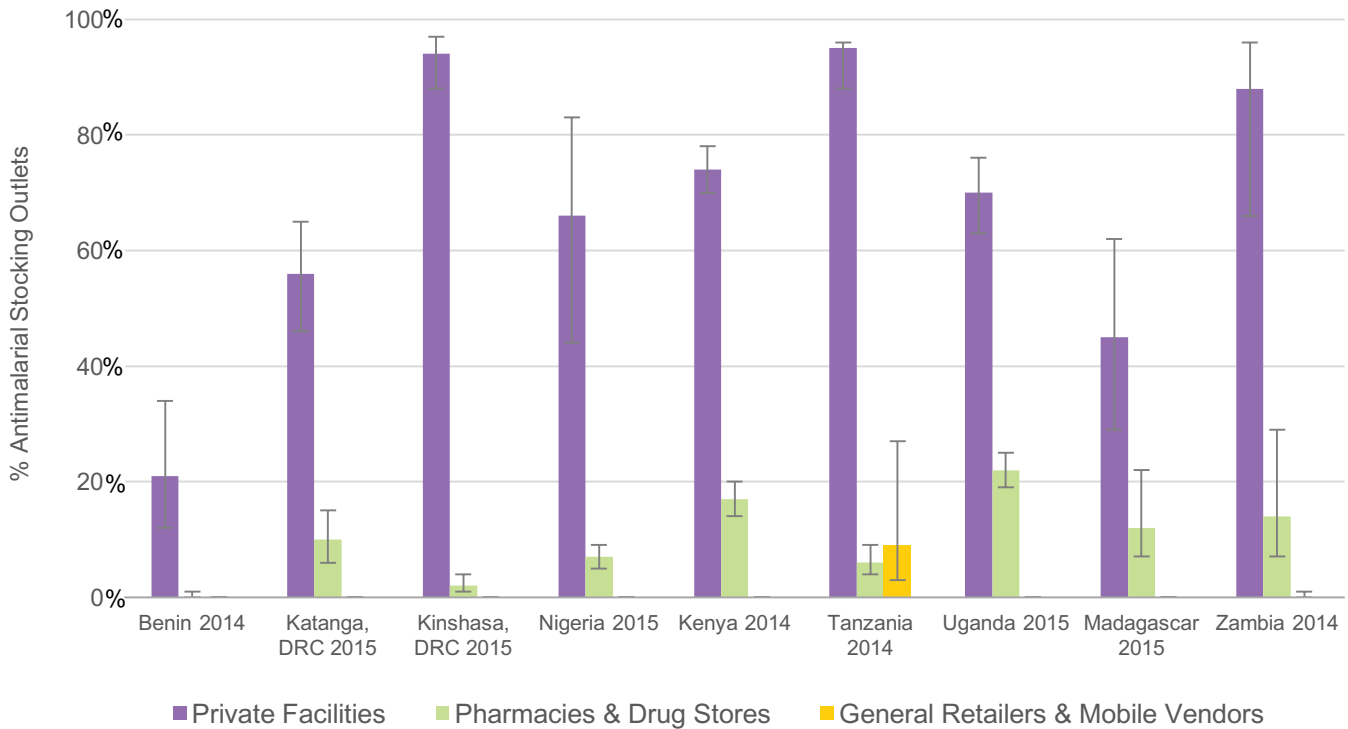
In the private sector, moderate increases in testing availability were observed across most countries. However, malaria testing availability in private-sector outlets remained low, ranging from 3 percent in Benin (2014) to 33 percent in Uganda (2015).

Within the private sector, there was variability in the availability of malaria testing during the most recent survey round according to outlet type. General retailers and mobile vendors generally did not provide confirmatory testing. Testing availability among pharmacies and drug stores was generally low (less than 10 percent) in Benin, the DRC, Nigeria, and Tanzania, and testing availability was lower than 25 percent in all other countries. More than half of private for-profit health facilities had confirmatory testing available in each country, with the exception of lower availability in Madagascar (45 percent) and Benin (21 percent).

AVAILABILITY OF MALARIA DIAGNOSTIC TESTS (mRDTs OR MICROSCOPY), AMONG PUBLIC- AND PRIVATE-SECTOR ANTIMALARIAL-STOCKING OUTLETS



AVAILABILITY OF MALARIA DIAGNOSTIC TESTS ACROSS PRIVATE-SECTOR OUTLET TYPES



MALARIA BLOOD TESTING MARKET SHARE

The number of malaria blood tests performed using microscopy and mRDTs in the seven days preceding the survey was assessed for each outlet. This information was used to estimate relative blood testing market share.

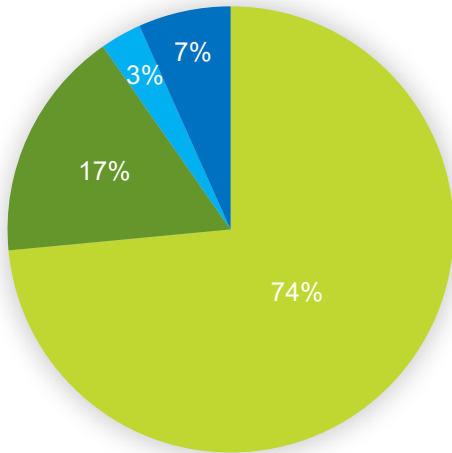
In all countries, the public sector provided the majority of blood tests. Public-sector market share ranged from 52 percent in Kinshasa to over 90 percent in Benin and Zambia. Most tests administered in the public sector were conducted with mRDTs, with exceptions in Kenya and Kinshasa where malaria microscopy was also common.

Private-sector testing market share was generally low, with the exceptions of Kenya and Kinshasa where private-sector microscopy accounted for nearly half of the total testing market share. In these countries, most of the testing provided by the private sector was with malaria microscopy.

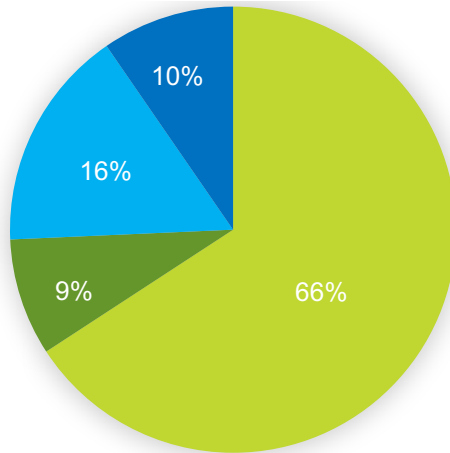




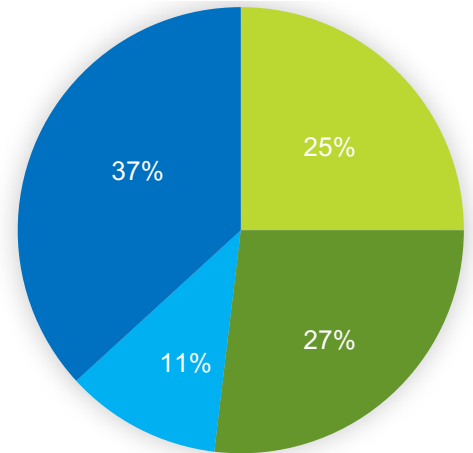
Benin 2014



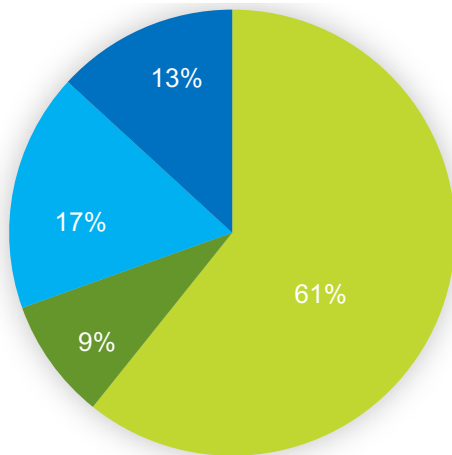
Katanga, DRC 2015



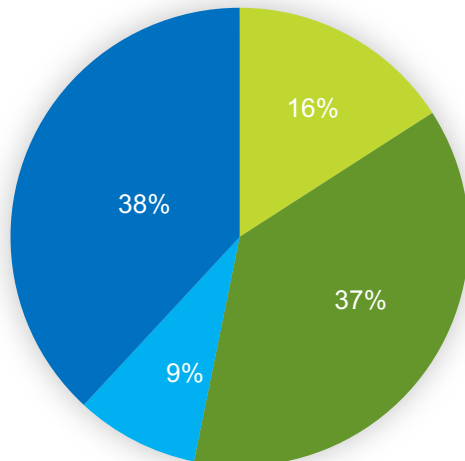
Kinshasa, DRC 2015



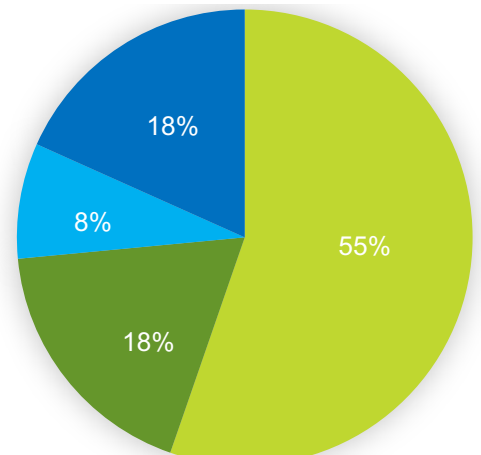
Nigeria 2015



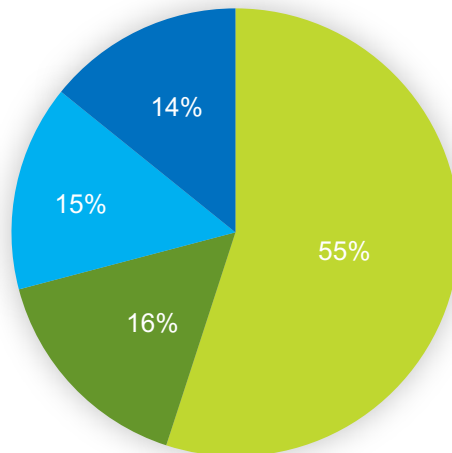
Kenya 2014



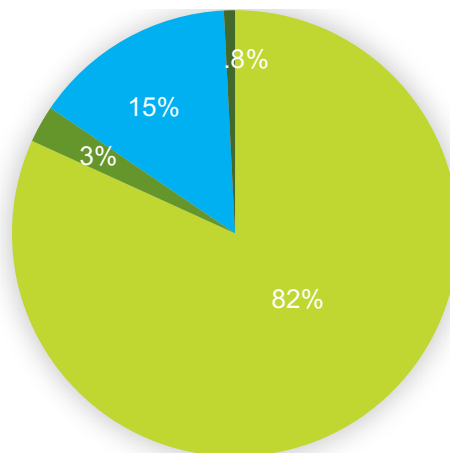
Tanzania 2014



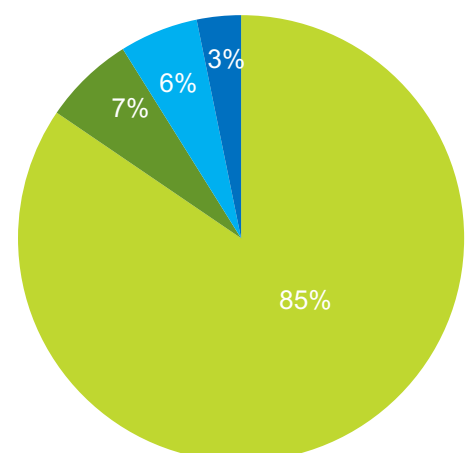
Uganda 2015



Madagascar 2015



Zambia 2014



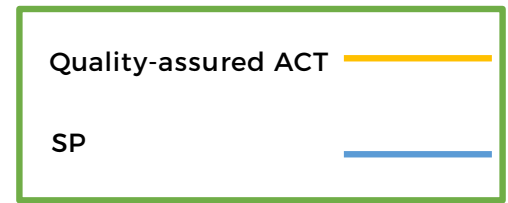
Private-sector price

Subsidized quality-assured ACT has been made available at scale in the public and private sectors through a copayment mechanism administered by the Global Fund since 2010 in Nigeria, Uganda, Kenya, Tanzania, and Madagascar. Figures in this section compare trends in private-sector price for quality-assured ACT, as compared with the popular non-artemisinin, SP.



PRIVATE-SECTOR PRICE OF A QUALITY-ASSURED ACT COMPARED TO SP

Results show a general decline in the price of quality-assured (QA) ACT over time. However, QA ACT remained up to 3.5 times more expensive than the popular non-artemisinin therapy, SP, in countries that have had a private-sector copayment mechanism. In countries without the copayment, QA ACT was 4 to 5 times more expensive than SP, and it was 11.5 times more expensive than SP in Kinshasa.

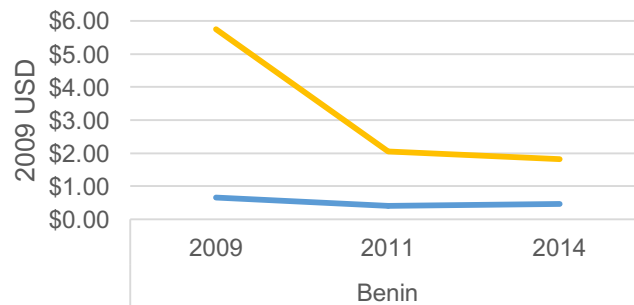


Consumer prices were captured in local currency and price was deflated to a base year of 2009 to account for inflation. 2009 price in local currency was converted to US dollars using official exchange rates for 2009. Price is shown for one adult equivalent treatment dose.

MEDIAN PRIVATE-SECTOR PRICE OF QA ACT COMPARED TO SP (TIMES MORE EXPENSIVE) (LEFT COLUMN):

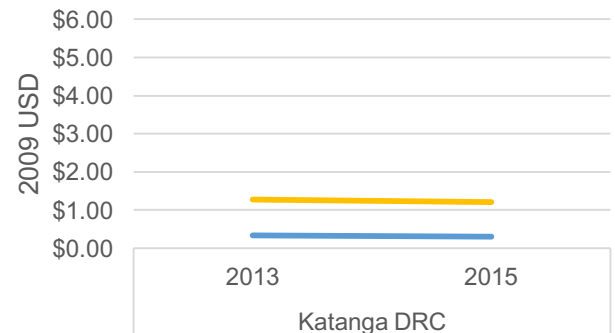
BENIN:

2009: 9
2011: 5
2014: 4



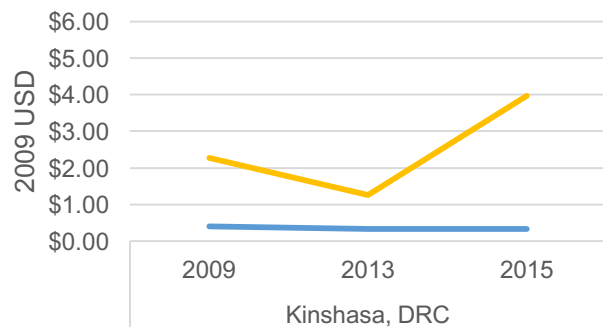
KATANGA, DRC:

2013: 4
2015: 4



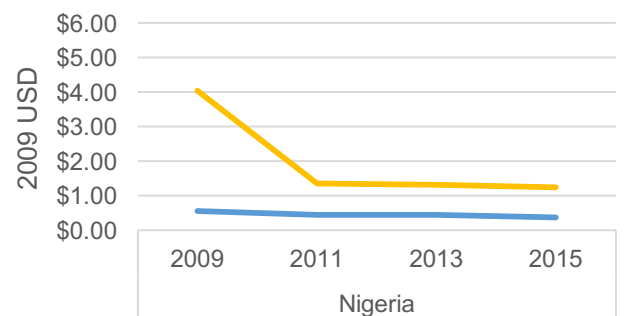
KINSHASA, DRC:

2009: 6
2013: 4
2015: 11.5



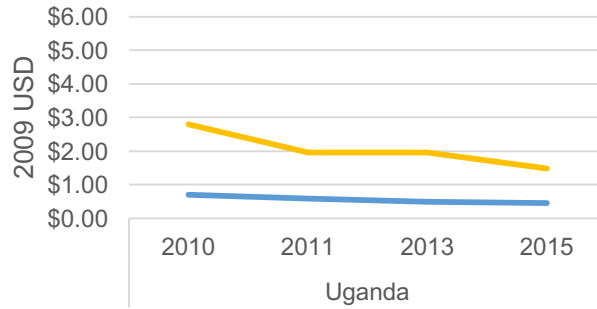
NIGERIA:

2009: 7.5
2011: 3
2013: 3
2015: 3.5



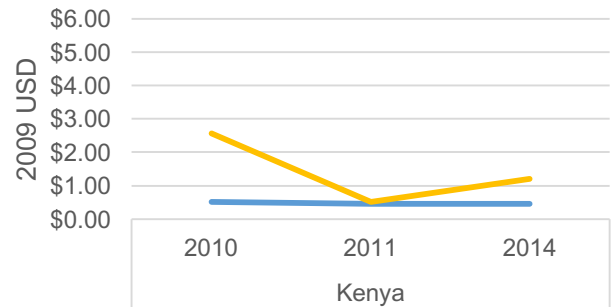
UGANDA:

2010: 4
2011: 3.5
2013: 4
2015: 3.5



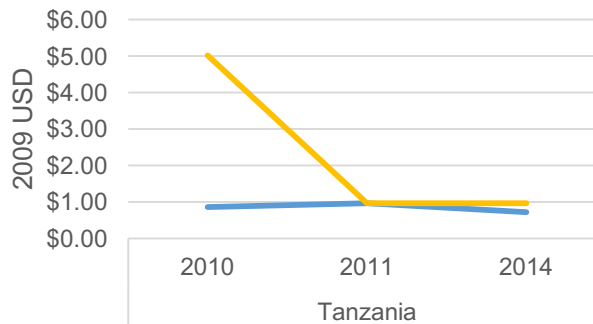
KENYA:

2010: 5
2011: 1
2014: 2.5



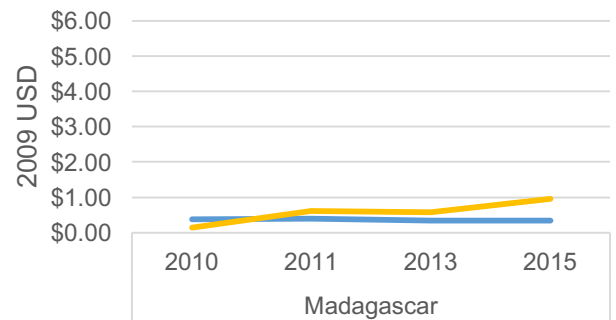
TANZANIA:

2010: 6
2011: 1
2014: 1.5



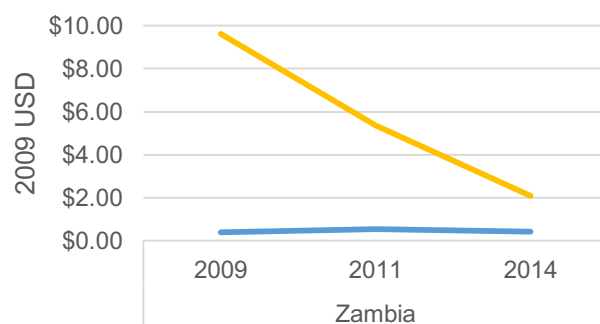
MADAGASCAR:

2010: 0.5
2011: 1.5
2013: 1.5
2015: 2




ZAMBIA:

2009: 24
2011: 10
2013: 5



Summary





Private-sector providers distribute the vast majority of antimalarial treatments in many malaria-endemic contexts in sub-Saharan Africa. Therefore, improving malaria case management coverage requires addressing readiness and performance of private providers. The private sector for malaria case management varies in composition across contexts. In some countries, formal, regulated, private-sector outlet types, including private for-profit facilities and pharmacies, are responsible for a substantial proportion of antimalarial distribution. Drug stores, including regulated and unregulated outlets, are common distributors in many contexts. Less common, but important in certain contexts, are informal outlets, including general retailers and mobile vendors. Improving case management practices requires knowing the unique composition of private-sector providers in each country.

One decade after shifts in national malaria treatment guidelines to ACT across sub-Saharan Africa, significant progress has been achieved in improving the availability and affordability of quality-assured ACT in the public and private sectors. However, while the relative antimalarial market share for quality-assured ACT has increased in recent years, distribution of non-artemisinin therapies, including SP, chloroquine, and quinine, remains common, particularly in the private sector.

Challenges to quality-assured ACT uptake persist. These include the widespread availability and use of SP for case management, particularly in the private sector, as well as the availability and distribution of other non-artemisinin therapies no longer recommended for case management. These include chloroquine and quinine tablets and syrups. The private-sector consumer price of quality-assured ACT has declined in recent years due to large-scale subsidy mechanisms targeting the public and private sectors in some of the study countries. However, the

relatively high cost of quality-assured ACT is likely a barrier contributing to uptake in other countries where private-sector price was typically 2 to 4 times higher than the price of SP.

The recent emergence of numerous non-quality-assured ACTs in some countries is another challenge to quality-assured ACT uptake. These challenges include ACT suspensions and tablets that are not WHO-prequalified or approved by a stringent drug regulatory authority. Non-quality-assured ACT availability and distribution in the private sector appears to be increasing in the DRC and Nigeria—high-burden countries—as well as in Kenya. Availability and use of these non-quality-assured treatments must be closely monitored given the threat that substandard combination therapies pose to parasite clearance and ongoing artemisinin drug efficacy.

While the majority of antimalarials are distributed by the private sector in most study contexts, the public sector is responsible for the vast majority of confirmatory testing. Malaria blood testing availability has increased dramatically within the public sector in recent years. While the availability of confirmatory testing has also increased in recent years in the private sector, the vast majority of antimalarial-stocking private-sector outlets do not have malaria microscopy or mRDTs available. Testing availability tended to be higher in private for-profit facilities compared with pharmacies and drug stores. Fewer than one in four antimalarial-stocking pharmacies and drug stores had confirmatory testing available, and yet these outlet types—particularly drug stores—captured large portions of the antimalarial market share in each country. Limited availability of malaria testing in the private sector is likely a barrier to increasing coverage of confirmatory testing prior to treatment, given the high relative antimalarial market share for the private sector in most malaria-endemic countries in sub-Saharan Africa. These countries include the high-burden DRC and Nigeria where drug stores distribute the vast majority of antimalarial treatments.

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ACTwatch is a multi-country research project designed to provide timely, relevant, and high-quality antimalarial market evidence. Launched in 2008 with funding from the Bill and Melinda Gates Foundation, it was implemented in 12 countries with additional funding from UNITAID and the DFID. Standardized tools and approaches were employed to provide comparable data across countries and over time.

Project achievements include the implementation of 50 outlet surveys, most of them nationally representative of the public and private sectors; a number of peer-reviewed publications; and a detailed catalogue of antimalarial medicines and rapid diagnostic tests available at www.actwatch.info. The project has informed malaria control and elimination strategies and priorities for national control programs and their partners.

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Evidence for Malaria Medicines Policy

