Catalyzing the Commercial Market for LLINs in Ghana

End-line Market Analysis, 2019
Acknowledgments
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URIKA Research, an independent market research firm, based in Ghana, conducted this end-line market analysis and wrote this report.

The implementation of the market analysis benefited immensely from the staff of CCP; specifically, Matthew Lynch, Felix Nyanor-Fosu, and Daniella Piccinini.

PSMP acknowledges the contributions of all other individuals and institutions that helped with this study at different stages: from the development of study tools and fieldwork implementation, to the analysis and report writing. We are particularly grateful to the participants of the various components of the study who donated their time, making the study possible.

About this report
This report presents the findings from an end-line market analysis conducted for the Private Sector Malaria Prevention (PSMP) project and the Johns Hopkins Center for Communication Programs.

All references to:

- **Bed nets** refer collectively to both long-lasting insecticide-treated nets (LLINs) and untreated nets.
- **Baseline market analysis** refers to the initial market research study conducted from March to December 2017 in the Ashanti, Greater Accra, and Western regions of Ghana to gain a comprehensive understand the landscape for the commercial retail of bed nets in Ghana.
- **Differentiated bed nets** refer collectively to both LLINs and untreated nets with attributes that differentiate them from the free LLINs distributed mass campaigns, schools, and health facilities in Ghana.
- **End-line market analysis** refers to the follow-up market analysis to the 2017 baseline market analysis, which was conducted 24 months (July–August 2019) after the baseline market analysis and in the same locations.
- **LLINs** refer to all insecticide-treated nets (ITNs). Note that bed nets categorized as LLINs (treated nets) are based on the labeling seen on the bed net package. Independent chemical testing was not done in this market analysis to verify if the bed nets are insecticide-treated, as shown on their labeling.
- **The Net Life Campaign** refers to a generic advertising campaign, initiated by the PSMP project—on television, radio, and fliers—to disseminate generic information and stimulate demand for the differentiated LLINs available in the retail market.
Contents

Acknowledgments.................................................................................................................. ii
About this report.................................................................................................................... ii
Figures.................................................................................................................................. iv
Tables.................................................................................................................................... iv
Abbreviations........................................................................................................................ v
Executive summary.................................................................................................................. 1
Background.............................................................................................................................. 3
  Context of the Research...................................................................................................... 3
  Key Objectives.................................................................................................................. 3
  Research Methodology...................................................................................................... 4
  Limitations of the Study.................................................................................................... 5
Overview of The Commercial Retail Market for Bed Nets....................................................... 5
  Where Can Consumers Find Bed Nets to Buy?................................................................. 6
  What Types of Bed Nets Do Retailers Sell?...................................................................... 6
  How Much Do Bed Nets Cost?......................................................................................... 11
  Bed Nets Stock Levels at Retail Outlets.......................................................................... 14
  How Do Retailers Get Their Bed Net Stock?................................................................... 15
Current Sales Trends for Bed Nets.......................................................................................... 18
  Bed Net Sales Trends....................................................................................................... 18
  Bed Nets Sales Promotion In-Store.................................................................................. 20
Net Life Campaign.................................................................................................................. 22
  Awareness Levels of the Net Life Campaign................................................................... 22
  Availability of Net Life Campaign Promoted Bed Nets on the Market........................... 25
Looking Forward: The Future of Commercial Retail of LLINs in Ghana............................... 26
  Capitalizing on the Market Opportunities...................................................................... 26
  Continued Participation and Investments by Supply Chain Players............................... 28
  Lessons Learned from the PSMP Project......................................................................... 29
Conclusion.............................................................................................................................. 32
Figures
Figure 1: Bed Net Sizes Available on the Market Comparing 2017 and 2019.........................................................8
Figure 2: Percentage of Bed Nets by Shape on the Market Comparing 2017 and 2019.................................9
Figure 3: Percentage of Differentiated and Undifferentiated Bed Nets on the Market in 2019..................10
Figure 4: Material Texture of Bed Nets on the Market Comparing 2017 and 2019........................................11
Figure 5: Insecticide-Treated Bed Nets on the Market Comparing 2017 and 2019........................................11
Figure 6: Assortment of Bed Nets Sold by Retailers.........................................................................................15
Figure 7: Seal of Approval for Net Life Campaign Nets..................................................................................22
Figure 8: Awareness by Region ......................................................................................................................23
Figure 9: Awareness by Urban-Rural Distribution .........................................................................................23
Figure 10: Awareness Across Media Channels by Region ........................................................................23
Figure 11: Awareness Across Media Channel by Urban-Rural Areas........................................................24
Figure 12: Availability of LLINs Promoted under the Net Life Campaign, by Region.............................25

Tables
Figure 1: Bed Net Sizes Available on the Market Comparing 2017 and 2019.........................................................8
Figure 2: Percentage of Bed Nets by Shape on the Market Comparing 2017 and 2019.................................9
Figure 3: Percentage of Differentiated and Undifferentiated Bed Nets on the Market in 2019..................10
Figure 4: Material Texture of Bed Nets on the Market Comparing 2017 and 2019........................................11
Figure 5: Insecticide-Treated Bed Nets on the Market Comparing 2017 and 2019........................................11
Figure 6: Assortment of Bed Nets Sold by Retailers.........................................................................................15
Figure 7: Seal of Approval for Net Life Campaign Nets..................................................................................22
Figure 8: Awareness by Region ......................................................................................................................23
Figure 9: Awareness by Urban-Rural Distribution .........................................................................................23
Figure 10: Awareness Across Media Channels by Region ........................................................................23
Figure 11: Awareness Across Media Channel by Urban-Rural Areas........................................................24
Figure 12: Availability of LLINs Promoted under the Net Life Campaign, by Region.............................25
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CCP</td>
<td>Johns Hopkins Center for Communications Programs</td>
</tr>
<tr>
<td>DFID</td>
<td>U.K. Department for International Development</td>
</tr>
<tr>
<td>GHS</td>
<td>Ghanaian cedi</td>
</tr>
<tr>
<td>ITN</td>
<td>insecticide-treated net</td>
</tr>
<tr>
<td>LLIN</td>
<td>long-lasting insecticide-treated net</td>
</tr>
<tr>
<td>PSMP</td>
<td>Private Sector Malaria Prevention project</td>
</tr>
<tr>
<td>USS</td>
<td>United States dollar</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<td>WHOPES</td>
<td>World Health Organization Pesticide Evaluation Scheme</td>
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Executive summary

The Private Sector Malaria Prevention (PSMP) project, an initiative funded by the U.K. Department for International Development, explored the potential of catalyzing a commercial market for long-lasting insecticide-treated nets (LLINs) as a complementary channel to free distributions (i.e., mass, school, and health facility distributions). To do this, PSMP had to assess the possibility of a commercial retail market for LLINs in Ghana, and commissioned a market analysis to understand the existing retail market for LLINs in the country and to determine if a profitable commercial retail of LLINs in Ghana was possible. A baseline market analysis was commissioned in 2017 (March to December), followed by an end-line market analysis in 2019 (July to August).

This report presents the findings of the end-line market analysis, which was a follow-up study to the baseline market analysis conducted in 2017; it concluded that there was a viable market for the commercial retail of LLINs in Ghana. Unlike the baseline market analysis, the end-line market analysis was limited in scope and gathered perspectives from only supply chain players—manufacturers, distributors, sub-distributors, and retailers—in the same areas as the baseline study: Ashanti, Greater Accra, and Western regions.

Quantitative retail audit interviews were conducted with 316 retailers; qualitative key informant interviews were conducted with 12 sub-distributors, two distributors, and one manufacturer. The interviews gathered insights about the most recent state of the commercial retail market for LLINs in Ghana, as of 2019, and the potential future of the market, specifically focusing on:

- Assessing any changes in the market since the baseline market analysis in 2017 for availability and types of bed nets on the market.
- Evaluating the current sales trends of bed nets.
- Assessing the impact of the Net Life Campaign—a generic advertising campaign on TV, radio, and in print to promote differentiated bed nets brought to market because of the consumer preference insights from the baseline study.
- Assessing how the commercial retail market for LLINs will look in the future after the PMSP project ends, and the desire for supply chain players to invest in stimulating the market.

Overall, in the short time since the baseline study, the findings from the end-line market analysis show some wide and marginal shifts in the market in the availability of bed nets, kinds of bed nets, prices of bed nets, and sales trends.

- Bed nets are sold in 8% of retail outlets in 2019 compared to 7% in 2017. Pharmacies and chemical shops remain the main retail outlets. The number of pharmacies selling bed nets has increased from 36% in 2017 to 49% in 2019, even though the percentage of pharmacies and chemical shops, relative to all other types of retail outlets, is about 12–13%.
- Retailers carry more varied bed nets now than before. The number of retail outlets selling at least two different types of bed nets increased from 48% in 2017 to 92% in 2019, with only 8% of retail outlets currently stocking only one kind of bed net, compared to 52% stocking only one kind in 2017.
• Compared to 16 brands in 2017, 14 brands of bed nets are now on the market. Half are new brands introduced in the last two years. The number of World Health Organization Pesticide Evaluation Scheme (WHOPES)–recommended brands available to consumers has also declined from six in 2017 to four in 2019.

• Larger bed nets are now more common on the market than in 2017. The number of double-size bed nets declined from 70% in 2017 to 46% in 2019, while the bigger queen- and king-size both increased by 6%.

• Of bed nets on the market, 36% are differentiated bed nets, which have at least one difference from the bed nets distributed through free distribution channels. The differences are either in the way they are hung, how to enter and exit; or they have the seal of approval showing they are genuine Net Life Campaign nets.

• The average retail price for bed nets also increased by 32% from Ghanaian cedi (GHS) 19.0 (US$4.38) in 2017 to GHS 25.0 (US$4.64) in 2019. The average wholesale price also increased by 39% from GHS 14.0 (US$3.23) in 2017 to GHS 19.5 (US$3.61) in 2019. The increase in retail and wholesale prices could be due to the rate of inflation on household furnishing and items for this period, which was 29%. Profit margins remain at 24% during this same period.

• Differentiated bed nets, in general, and differentiated bed nets promoted under the Net Life Campaign, outsell undifferentiated bed nets. According to retailers (44%), the pop-up differentiated bed net is the fastest-selling. Of retailers who sell both LLINs promoted under the Net Life Campaign and bed nets not promotedunder the campaign, 38% said more customers buy bed nets promoted under the campaign.

• Only 2% of retail outlets have any in-store point-of-sale advertisements.

• The Net Life Campaign advertisements (TV, radio, and flyers)—which promoted differentiated bed nets brought in by two distributors with PSMP project seed funding and which only lasted two months—reached 49% of retailers within the study area. TV created the most awareness of the Net Life Campaign among retailers (39%), followed by radio (18%), and flyers (12%).

• Of all the bed nets found in retail outlets, 17% had the seal of approval promoted through the generic advertising campaign. They were found in 11% of all retail outlets in the study area.

• The interest of supply chain players (manufacturers, distributors, and sub-distributors) in making future investments in the commercial retail market for LLINs in Ghana is low to moderate for the following reasons:
  ○ Manufacturers appear risk-averse and want to limit their involvement in the value chain by only supplying differentiated LLINs to local distributors.
  ○ Distributors lack the financial resources to continue the investment from where the PSMP project ended its efforts.
  ○ Sub-distributors stated it is not their responsibility to invest in market catalyzing activities.

Overall, the findings from the 2017 baseline market analysis found a viable retail market for LLINs in Ghana. The end-line study conducted in 2019 confirms that the opportunities identified in the market in 2017 remain. Value chain players can exploit these opportunities profitably by making strategic

investments into specific areas that encourage the demand for LLINs among the Ghanaian middle-class consumer.

**Background**
This section discusses the context of the end-line market analysis, key objectives of this follow-up study, research approach, and limitations.

**Context of the Research**
The end-line market analysis follows up the comprehensive baseline market analysis conducted in 2017. The analysis is narrower in scope than the baseline and it focuses, specifically, on the players in the supply chain of bed nets—manufacturers, distributors, sub-distributors, and retailers—to understand the changes in the commercial retail market for long-lasting insecticide-treated nets (LLINs) in Ghana since the baseline analysis. It also looks at the impact, if any, of the interventions the Private Sector Malaria Prevention (PSMP) project implemented.

Based on the findings of the baseline market analysis, the PSMP project intervened to support the supply chain players and to encourage demand for LLINs available through retail outlets. The interventions the PSMP project took to stimulate the commercial retail market for LLINs included:

- Conducted a comprehensive baseline market analysis in 2017 to determine market viability for LLINs in Ghana.
- Presented the key findings from the market analysis to key stakeholders, including LLIN manufacturers and local distributors, on the opportunities for LLINs in Ghana.
- Provided seed stock to two local distributors to bring to market differentiated World Health Organization Pesticide Evaluation Scheme (WHOPES)-recommended LLINs to prime the supply chain.
- Developed, and disseminated in the media, generic advertising to promote differentiated LLINs under the Net Life Campaign.
- Provided a seal of approval sticker for all LLINs promoted under the Net Life Campaign, confirming to consumers the LLINs’ authenticity.

The end-line market analysis measured any changes in the market dynamics of the commercial retail market for LLINs over 24 months; between when baseline data from retail audits and key informant interviews with manufacturers, distributors, and sub-distributors were collected in July of 2017 to July 2019 when the same data were gathered during the end-line market analysis.

**Key Objectives**
The primary objective of the end-line market analysis was to evaluate the changes that may have occurred in the commercial retail market for LLINs since the 2017 baseline market analysis. The specific objectives included:

1. To provide an updated overview of the current commercial retail market for bed nets (insecticide-treated and untreated).
   - What is the percentage of retail outlets stocking bed nets in 2019 compared to 2017?
   - Which brands of bed nets are on the retail market in 2019 compared to those found in 2017?
• What are the attributes (i.e., shape, size, insecticide treatment) of bed nets on the market in 2019 compared to 2017?
• What differentiated bed nets are currently on the market, and what percentage of those differentiated bed nets were promoted in the Net Life Campaign?
• How has the price of bed nets on the retail market changed from 2017 to 2019?

2. To evaluate the current sales trend for bed nets.
   • Comparing 2017 to 2019, what are the current sales trends for bed nets?
   • How does demand for differentiated bed nets and undifferentiated bed nets vary, if at all?

3. To assess the impact of the Net Life Campaign that was implemented after the baseline study.
   • Were retailers aware of the Net Life Campaign?
   • Are retailers stocking differentiated bed nets that were promoted through the Net Life Campaign?
   • Is there a demand for differentiated bed nets with the gold seal of approval?

4. To assess what the future for commercial retail of LLINs in Ghana looks like after the PSMP project.
   • Are supply chain players going to continue investing in the commercial retail market for LLINs?
   • What do the supply chain players expect the future demand for LLINs to be in the commercial retail market?
   • What are some challenges and lessons learned from the PSMP project?

Research Methodology
The end-line market analysis used both quantitative and qualitative research methodologies. The quantitative aspect involved retail audits (interviews with bed net retailers) and qualitative were key informant interviews (in-depth interview) with supply chain members across the three focal regions in Ghana.

Study Area
The end-line market analysis was conducted from July–August 2019 in the same three regions where the baseline data collection took place in 2017—Ashanti (25 communities), Greater Accra (25 communities), and Western (21 communities)—which covered 71 urban and rural communities (enumeration areas). These regions were selected as the focal areas for the PSMP project, including the baseline and end-line market analysis because:

• A sustainable commercial market for LLINs will only thrive if the potential target customers can afford to buy their own LLINs. In Ghana, poverty rates are generally lower in urban than in rural areas. The three regions studied are the least poor and most urbanized regions in Ghana.
  o Out of the 16 regions in Ghana, Greater Accra has the lowest poverty incidence (5.6%) and is the most urbanized region in the country, with 92% of its households in urban areas.²
  o The Ashanti region follows with a poverty rate of 15% and 64% of its households in urban areas.
  o The Western region is the fourth least-impoverished region in Ghana, with a poverty rate of 21% and 45% of its households in urban areas.

• To capture the market share for the retail of LLINs, the study focused on areas with the lowest saturation of household LLIN ownership. The 2016 Ghana Malaria Indicator Survey reported the LLIN penetration rates for households that own at least one LLIN as 61% for Greater Accra, 67% for Western, and 70% for Ashanti; compared to the Upper East region of Ghana, for example, where penetration is as high as 94%.\(^3\) Because these three regions have the lowest number of LLINs across the country, it may mean there is room to sell LLINs and capture a market share in these regions.

**Retail Audits**
Retail audits are quantitative surveys carried out in retail shops with employees of these shops to gather data about product lines, stock levels, sales volumes, sales trends, etc., on the products of interest.

For the end-line market analysis, the retail audit component included a sample size of about 10% of retail outlets, selected using random and quota sampling from a sample frame of 3,037 listed retail outlets in the three focal regions. The retail audit was conducted across a sample of 316 retail outlets that sell bed nets in the regions of Ashanti (109 retail audits), Greater Accra (104 retail audits), and Western (106 retail audits).

The types of retail outlets included were pharmacies/chemical shops, convenience shops/mini-supermarkets, supermarkets, clothing shops, and mothercare shops. The retail audit provided information on the types of retailers that currently sell bed nets (LLINs and untreated bed nets), the types of bed nets in stock, pricing structure for bed nets, and sales trends.

**Key Informant Interviews**
The key informant interviews consisted of one-on-one in-depth interviews with 15 supply chain members: one LLIN manufacturer, two distributors, and 12 sub-distributors (wholesalers). The interviews assessed sentiments about the current landscape for investments into the commercial LLIN market, as well as to gauge interest in future investments.

**Limitations of the Study**
• Only four months passed between when the LLINs from the PSMP-procured seed stock reached retail outlet shelves (March 2019) and the data collection for the end-line market analysis. It was not considered long enough to comprehensively measure the impact of this PSMP market stimulation intervention on the market.
• The study was conducted in only three of the 10 regions in Ghana. Therefore, the results of the market analysis are generalized to only the three regions.

**Overview of The Commercial Retail Market for Bed Nets**
Based on the baseline retail audit, conducted during the 2017 market analysis, and the end-line retail audit, conducted in 2019, this section presents findings on how the commercial retail market for bed nets has

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evolved. The section discusses where consumers can buy bed nets, the types (brands, shapes, sizes, insecticide treatment) of bed nets stocked by retailers, price of bed nets, as well as how retailers procure stock for bed nets.

**Where Can Consumers Find Bed Nets to Buy?**
Between 2017 and 2019, there was a marginal increase in the number of retail outlets across the study areas that sell bed nets: from 7% in 2017 to 8% in 2019 (see Table 1). This increase bodes well for consumers looking to purchase bed nets, because it improves access to and the availability of bed nets on the commercial retail market.

**Table 1: Types of Retail Outlets Selling Bed Nets**

<table>
<thead>
<tr>
<th>Type of Retail Outlet</th>
<th>Percentage Selling Bed Nets</th>
<th>Percentage of Retail Outlet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacies and chemical shops</td>
<td>36% 49%</td>
<td>12% 13%</td>
</tr>
<tr>
<td>Convenience shops/mini-supermarkets</td>
<td>13% 2%</td>
<td>78% 47%</td>
</tr>
<tr>
<td>Supermarkets</td>
<td>3% 9%</td>
<td>4% 1%</td>
</tr>
<tr>
<td>Mothercare shops</td>
<td>2% 17%</td>
<td>1% 4%</td>
</tr>
</tbody>
</table>

*Note:* The 2017 analysis is based on 2,814 retail audit listing of all retail outlets in the study area, of which 184 sold bed nets. The 2019 analysis is based on a listing of 3,037 retail outlets in the study area, of which 244 sell bed nets.

The trend indicates that pharmacies and chemical shops will remain the single biggest retailer of bed nets in the Ashanti, Greater Accra, and Western regions. Pharmacies and chemical shops, which account for approximately one in every 10 retail outlets (12% in 2017 and 13% in 2019) stock most bed nets. All other types of nonpharmaceutical retail outlets combined—convenience shops, mini-supermarkets, supermarkets, mothercare shops, clothing shops, etc.—which made up 88% in 2017 and 87% in 2019, stock fewer bed nets.

**What Types of Bed Nets Do Retailers Sell?**
Retailers sell bed nets that vary by shape, size, insecticide treatment, material texture, and unique attributes, such as a zippers or pop-up structures (see Table 2). Consumer preferences and use of bed nets are tied to the types of bed nets available for purchase⁴, so it is useful to understand the variety of bed nets available in the retail market. The information in this section is based on adult-sized bed nets only, which this market analysis focused on. In the end-line retail audit, adult-sized bed nets are 66% of all bed nets found in retail outlets, while baby nets are 34%.

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Brands of Bed Nets on the Retail Market

Table 2: Market Share of Bed Net Brands on the Retail Market in 2017 and 2019

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>PermaNet</td>
<td>65.0%</td>
<td>48.9%</td>
<td>Yes</td>
<td>Treated</td>
</tr>
<tr>
<td>Dawa Plus 2.0</td>
<td>5.0%</td>
<td>16.3%</td>
<td>Yes</td>
<td>Treated</td>
</tr>
<tr>
<td>Unbranded</td>
<td>9.0%</td>
<td>14.8%</td>
<td>No</td>
<td>Treated</td>
</tr>
<tr>
<td>Yorkool</td>
<td>&lt;1%</td>
<td>7.5%</td>
<td>Yes</td>
<td>Treated</td>
</tr>
<tr>
<td>Deltanet</td>
<td>7.0%</td>
<td>5.5%</td>
<td>No</td>
<td>Treated</td>
</tr>
<tr>
<td>Eagle</td>
<td>-</td>
<td>1.6%</td>
<td>No</td>
<td>Treated</td>
</tr>
<tr>
<td>Feixiang</td>
<td>-</td>
<td>1.5%</td>
<td>No</td>
<td>Treated</td>
</tr>
<tr>
<td>Romantic House</td>
<td>-</td>
<td>1.3%</td>
<td>No</td>
<td>Untreated</td>
</tr>
<tr>
<td>Net Protect</td>
<td>&lt;1%</td>
<td>1.2%</td>
<td>Yes</td>
<td>Treated</td>
</tr>
<tr>
<td>Boai Mosquito Net</td>
<td>-</td>
<td>&lt;1%</td>
<td>No</td>
<td>Treated</td>
</tr>
<tr>
<td>Sunflower</td>
<td>-</td>
<td>&lt;1%</td>
<td>No</td>
<td>Untreated</td>
</tr>
<tr>
<td>Easier</td>
<td>1.0%</td>
<td>&lt;1%</td>
<td>No</td>
<td>Untreated</td>
</tr>
<tr>
<td>Kingsway</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>No</td>
<td>Treated</td>
</tr>
<tr>
<td>Frendonzin</td>
<td>-</td>
<td>&lt;1%</td>
<td>No</td>
<td>Treated</td>
</tr>
<tr>
<td>Meng Gin Net</td>
<td>-</td>
<td>&lt;1%</td>
<td>No</td>
<td>Untreated</td>
</tr>
</tbody>
</table>

Note: The market share of brands is based on 221 bed nets found in retail outlets in 2017 and 923 bed nets found in retail outlets in 2019. Market share is based only on adult-sized bed nets, which are 66% of bed nets found in retail outlets.

The end-term retail audit found 14 brands of bed nets on the retail market compared to 16 brands in 2017. Of the 14 brands, seven are new brands that were not available on the market in 2017. Also, 56% (9 out of 16) of bed nets on the market in 2017 were no longer available in 2019.

Fewer choices (four brands) of WHOPES-recommended brands were on the market in 2019 compared to 2017, when six WHOPES-recommend brands were available. However, despite the fewer WHOPES-recommended brands choices available to consumers in 2019, WHOPES-recommended brands remain the dominant bed nets on the market; their combined market share remained unchanged from 2017 to 2019, at 74%.

Bed Net Sizes on the Retail Market

Double-size bed nets are the most common size in the retail market. However, the number of double-size bed nets declined from 70% in 2017 to 46% in 2019. Single-size and king-size bed nets increased from 20% in 2017 to 38% in 2019, and 2% in 2017 to 4% in 2019, respectively (Figure 1).

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<sup>5</sup> WHOPES-recommended brands refer to brands of LLINs recommended by the WHOPES for use by the public. WHO has given full or interim approval to these brands of LLINs.
**Figure 1: Bed Net Sizes Available on the Market Comparing 2017 and 2019**

![Bar chart showing bed net sizes available on the market comparing 2017 and 2019.](image)

- **Single/Student**:
  - 20% in 2017
  - 38% in 2019

- **Double**:
  - 70% in 2017
  - 46% in 2019

- **Queen**:
  - 8% in 2017
  - 12% in 2019

- **King**:
  - 2% in 2017
  - 4% in 2019

**Notes:**
Number of bed nets found by size in 2017: **Student** (n=44), **Double** (n=155), **Queen** (n=18), **King** (n=4), **Total** (n=221)
Number of bed nets found by size in 2019: **Student** (n=352), **Double** (n=424), **Queen** (n=107), **King** (n=40), **Total** (n=923)

In figure 1, the following dimensions correspond with the bed net sizes:
- **King** [Rectangular: Approx. 190 x 180 x 180] [Conical: Approx. 1,050 x 56/65 x 220/250]
- **Queen** [Rectangular: Approx. 190 x 180 x 170] [Conical: Approx. 1,050 x 56 x 220]
- **Double** [Rectangular: Approx. 190 x 180 x 150] [Conical: Approx. 850 x 56 x 220]
- **Single** [Rectangular: Approx. 100/130 x 180 x 150]

The market analysis conducted in 2017 indicated that target consumers find spacious bed nets (bigger sizes) more comfortable, and the average probability of purchase for LLINs from double-size to queen-size increases from 41% to 51%. Figure 1 shows that the availability of larger bed nets (queen-size and king-size) that meet consumer preferences has increased from 8% in 2017 to 12% in 2019 for queen-size nets and from 2% in 2017 to 4% in 2019 for king-size. This shows that the market is gradually responding to consumer preferences by bringing to market more of the bed nets sizes consumers want.

Additionally, the 2017 market analysis also discovered a niche market for student-sized bed nets. Focus groups with secondary school boarding students found they were unhappy using bed nets at school because the ones available to them through free distribution and the retail market were too large for their needs.

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Since that initial research, the percentage of student-sized bed nets has almost doubled from 20% in 2017 to 38% in 2019.

**Shapes of Bed Nets on the Retail Market**
Rectangular-shaped bed nets remain the most common shape on the market. In both 2017 and 2019, they accounted for 71% of all bed nets found in retail outlets (see Figure 2).

**Figure 2: Percentage of Bed Nets by Shape on the Market Comparing 2017 and 2019**

<table>
<thead>
<tr>
<th>Shape</th>
<th>2017</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectangular</td>
<td>71%</td>
<td>71%</td>
</tr>
<tr>
<td>Conical</td>
<td>29%</td>
<td>29%</td>
</tr>
</tbody>
</table>

**Note:** Number of bed nets found by shape in 2017: Rectangular (n=157), Conical (n=64), Total (n=221)
Number of bed nets found by shape in 2019: Rectangular (n=653), Conical (n=270), Total (n=923). The 2019 end-line market includes pop-up bed nets: some were rectangular and others conical.

**Undifferentiated versus Differentiated Bed Nets on the Market**
On the commercial retail market, 36% of bed nets were differentiated. They had at least one of the following attributes that made them different and, in some instances, easier to use than LLINs distributed through free distribution channels. For this market analysis, bed nets with the following features were categorized as differentiated:

- pop-up bed nets (easier to hang because they do not need to be hung)
- bed nets with a zipper (easy entry and exit into bed nets)
• bed nets with the gold seal of approval on the packaging (promoted under the Net Life Campaign).7

Figure 3 shows the percentage of the various types of differentiated bed nets and undifferentiated bed nets identified on the market during the end-line retail audit.

**Figure 3: Percentage of Differentiated and Undifferentiated Bed Nets on the Market in 2019**

<table>
<thead>
<tr>
<th>Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undifferentiated bed nets</td>
<td>64%</td>
</tr>
<tr>
<td>Differentiated: Pop-up bed nets</td>
<td>16%</td>
</tr>
<tr>
<td>Differentiated: Bed nets with seal of approval</td>
<td>14%</td>
</tr>
<tr>
<td>Differentiated: Pop-up bed nets with seal of approval</td>
<td>3%</td>
</tr>
<tr>
<td>Differentiated: Zipper bed nets</td>
<td>2%</td>
</tr>
</tbody>
</table>

**Note:** Number of undifferentiated and differentiated bed nets found on the market in 2019: Undifferentiated (n=592), Differentiated (n=331), Total (n=923)

**Material Texture of Bed Nets on the Retail Market**

As found during the 2017 market analysis, consumers consider material texture the third most important characteristic—durability is the second and insecticide treatment is the most important. Consumers consider material texture more important than shape, size, and color.8 Consumers also think that polyester material (soft texture) bed nets are more comfortable (cooler) than polyethylene material (hard texture).9 See Figure 4.

---

7 The Net Life Campaign was an advertising effort, through television, radio, and fliers, to disseminate generic information and stimulate demand for the differentiated LLINs. The PMSP project provided seed stock for two local distributors to bring them to market.
Insecticide-Treated Bed Nets on the Retail Market

Almost all bed nets on the market are labeled as insecticide treated; only 5% of bed nets found in retail shops in 2017 were untreated, and even fewer (2%) in 2019. In the 2017 market analysis, consumers ranked insecticide treatment as the most important feature (46% of consumers) when buying a bed net (see Figure 5).

**Figure 4: Material Texture of Bed Nets on the Market Comparing 2017 and 2019**

- **Polyester (Soft)**: 83% (2017), 95% (2019)
- **Polyethylene (Hard)**: 17% (2017), 5% (2019)

**Notes:** Number of bed nets found by material texture in 2017: Polyester (n=183), Polyethylene (n=38), Total (n=221). Number of bed nets found by material texture in 2019: Polyester (n=874), Polyethylene (n=49), Total (n=923). Polyester bed nets dominate the market. In 2017, 87% on the market were polyester; this increased to 95% in 2019. Overall, most bed nets on the market meet the material texture preference of consumers.

**Figure 5: Insecticide-Treated Bed Nets on the Market Comparing 2017 and 2019**

- **LLIN**: 95% (2017), 98% (2019)
- **UTN**: 5% (2017), 2% (2019)

**Note:** Bed nets categorized as LLINs (treated nets) in this report are based on the labeling on the package of the bed net. No chemical testing was done to verify this.

**How Much Do Bed Nets Cost?**

Between 2017 to 2019, the average retail price of bed nets on the retail market increased by 32% from GHS 19.0 (US$4.38) in 2017, to GHS 25.0 (US$4.64). During this same period, wholesale prices—how much retailers pay their distributors—increased by 39% from GHS 14.0 (US$3.23) in 2017 to GHS 19.5 (US$3.61) in
2019. These increases in both retail and wholesale prices over the 24 months between the baseline and end-line retail audit reflect the rate of inflation on some consumer goods over this period. Ghana’s consumer price index shows that inflation for household furnishing and items was 29% between July 2017 to July 2019.\(^{10}\) Profit margins for bed nets (24%) stayed the same for 2017 and 2019. Table 3 and Table 4 show the retail prices, wholesale prices, and profit margins for bed nets of varying sizes for 2017 and 2019 in Ghanaian cedis and US dollars.

### Table 3: Retail Pricing Structure of Bed Nets in Ghanaian Cedi for 2017 and 2019

<table>
<thead>
<tr>
<th>Types of Bed Nets by Size</th>
<th>Year</th>
<th>Retail Price (GHS)</th>
<th>Wholesale Unit Prices (GHS)</th>
<th>Profit Margin (GHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Avg</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Single/student</td>
<td>2017</td>
<td>15.0</td>
<td>7.0</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>24.6</td>
<td>10.0</td>
<td>70.0</td>
</tr>
<tr>
<td>Double</td>
<td>2017</td>
<td>18.0</td>
<td>8.0</td>
<td>45.0</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>21.7</td>
<td>8.0</td>
<td>50.0</td>
</tr>
<tr>
<td>Queen</td>
<td>2017</td>
<td>26.0</td>
<td>15.0</td>
<td>35.0</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>27.6</td>
<td>10.0</td>
<td>50.0</td>
</tr>
<tr>
<td>King</td>
<td>2017</td>
<td>44.0</td>
<td>25.0</td>
<td>65.0</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>42.1</td>
<td>11.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Overall average pricing</td>
<td>2017</td>
<td>19.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>25.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 4: Retail Pricing Structure of Bed Nets in US Dollars for 2017 and 2019

<table>
<thead>
<tr>
<th>Type of Bed Net by Size</th>
<th>Year</th>
<th>Retail Price (US$)</th>
<th>Wholesale Unit Prices (US$)</th>
<th>Profit Margin (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Avg</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Single/student</td>
<td>2017</td>
<td>3.46</td>
<td>1.61</td>
<td>5.76</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>4.56</td>
<td>1.85</td>
<td>12.96</td>
</tr>
<tr>
<td>Double</td>
<td>2017</td>
<td>4.15</td>
<td>1.84</td>
<td>10.37</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>4.01</td>
<td>1.48</td>
<td>9.26</td>
</tr>
<tr>
<td>Queen</td>
<td>2017</td>
<td>5.99</td>
<td>3.46</td>
<td>8.06</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>5.10</td>
<td>1.85</td>
<td>9.26</td>
</tr>
<tr>
<td>King</td>
<td>2017</td>
<td>10.14</td>
<td>5.76</td>
<td>14.98</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>7.80</td>
<td>2.04</td>
<td>18.52</td>
</tr>
<tr>
<td>Overall average pricing</td>
<td>2017</td>
<td>4.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>4.64</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Exchange rate [2017: 1US$ = GHS 4.34] [2019: 1US$ = GHS 5.40]
**Bed Nets Stock Levels at Retail Outlets**

Of retailers who sold bed nets, 67% had stock during the end-line retail audit. The average bed net stock level per retailer increased by 71%: from 1.7 in 2017 to 2.9\textsuperscript{11} bed nets in 2019. For the 23% of retailers that did not have stock during the end-line retail audit, the reasons are given in Table 5.

**Table 5: Reasons for Not Having Stock**

<table>
<thead>
<tr>
<th>Why Some Retailers Did Not Have Bed Net Stock</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>We just run out of stock</td>
<td>41%</td>
</tr>
<tr>
<td>I have ordered stock; I am waiting for it to be delivered</td>
<td>18%</td>
</tr>
<tr>
<td>There is no demand for mosquito nets</td>
<td>13%</td>
</tr>
<tr>
<td>No reason, we just haven’t ordered yet</td>
<td>10%</td>
</tr>
<tr>
<td>Don’t get the type or quality of bed nets that customers want from suppliers</td>
<td>5%</td>
</tr>
<tr>
<td>Do not have the capital to restock now</td>
<td>5%</td>
</tr>
<tr>
<td>My suppliers do not have stock</td>
<td>4%</td>
</tr>
<tr>
<td>We were unavailable to order</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
</tr>
</tbody>
</table>

The end-line retail audit also revealed that retail outlets are stocking a larger assortment of bed nets—by brand, shape, color, and treated or untreated—for customers now than during the baseline. In the 2017 baseline retail audit, fewer than half of retailers (48%) were stocking two or more kinds of bed nets, compared to the end-line retail audit in 2019, with 92% stocking two or more kinds. *Figure 6* shows the variety of bed nets sold by retailers.
How Do Retailers Get Their Bed Net Stock?
This section highlights the sources of bed nets for retailers, how retailers receive stock, and the payment terms that retailers have with their suppliers.

Bed Nets Stock Supply Sources for Retailers
The analysis showed that most (87%) retailers had only one supplier (distributor, sub-distributor, or another retailer), while 9% had two suppliers, and 3% had three suppliers. Ninety-four percent of retailers sourced their bed nets from sub-distributors (wholesalers), 10% directly from distributors (importers), and 8% with other retailers.

Modes of Bed Nets Stock Delivery to Retailers
Retailers receive their bed nets from suppliers by either having the suppliers deliver the stock or the retailer picks up the stock from the supplier. Table 6 shows the retailers who pick up their stock and those who get stock delivered to them, either free or at a cost to the retailer.
Table 6: How Retailers Get Their Bed Nets Stock

<table>
<thead>
<tr>
<th>How Retailers Receive Their Stock</th>
<th>2017 Baseline</th>
<th>2019 End-Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retailer picks up stock from supplier</td>
<td>66%</td>
<td>74%</td>
</tr>
<tr>
<td>Stock delivered to the retailer for free</td>
<td>27%</td>
<td>22%</td>
</tr>
<tr>
<td>Stock delivered to the retailer at a cost (retailer pays for delivery)</td>
<td>8%</td>
<td>4%</td>
</tr>
</tbody>
</table>

At end-line, fewer suppliers are offering free delivery of bed net stock to the retailers compared to baseline, a decline from 27% to 22%. During the same period, more retailers used public transport (increased from 45% to 57%) to pick up the stock (increased from 66% to 74%).

Payment Terms Retailers Have with Suppliers

The payment terms that retailers negotiate with their suppliers varied based on the type of supplier. The structure payment terms fell into three broad categories.

The percentage of retailers who:

- 71% pay their suppliers in full when they receive bed nets stock
- 22% receive a credit line of 30–90 days from their suppliers
- 19% make a non-fixed periodical payment to the supplier after retail sales of the bed nets, with the option of returning bed nets to the supplier if unsold

Table 7 shows the structure of payment terms bed nets retailers have with their suppliers based on the type of supplier. Retailers who source directly from distributors receive more flexible payment terms than those who get their bed nets from sub-distributors or other retailers. For example, of the retailers who source from distributors, only 25% must pay in full before collecting stock compared to 67% of retailers who must pay upfront when they source from sub-distributors.

Table 7: Retailer Payment Terms with Suppliers

<table>
<thead>
<tr>
<th></th>
<th>Distributors</th>
<th>Sub-Distributors</th>
<th>Retailers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full upfront payment to the supplier</td>
<td>16%</td>
<td>67%</td>
<td>88%</td>
</tr>
<tr>
<td>30–90 days credit line</td>
<td>59%</td>
<td>16%</td>
<td>12%</td>
</tr>
<tr>
<td>Non-fixed periodical payments with the option of returning stock if unsold</td>
<td>25%</td>
<td>17%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Key Takeaways
The end-line market analysis found that 8% of retail outlets in the study area sell bed nets. Pharmacies and chemical shops remain the primary place where consumers can find bed nets, with almost one in every two pharmacies and chemical shops (49%) selling bed nets. Players in the LLIN supply chain can intensify efforts to expand their distribution of LLINs beyond pharmaceutical channels, which are only 13% of types of retail outlets, so LLINs are more widely available through different types of retail outlets.

The 2019 end-line market analysis found that the following on the market:

- Fourteen brands of bed nets, of which four are WHOPES recommended; 50% of the brands on the market now were not on the market 24 months ago during baseline.
- More large bed nets are on the market now than 24 months ago—responding to consumer preferences.
- The shapes of bed net sizes remained the same during the 24 months, with 71% rectangular-shaped and 29% conical-shaped.
- 95% of the bed nets on the market are polyester, responding to consumer preferences for softer nets.
- Also, 98% of bed nets in retail outlets were labeled as insecticide-treated.
- The current average retail price of a bed net is GHS 25.0 (US$4.64), and the average wholesale price is GHS 19.5 (US$3.61). The average profit margin for retailers is about 24%.
- Currently, the average number of stocks a retailer carries is 2.9 bed nets compared to 1.7 bed nets during the 2017 baseline market analysis.
- Most retailers (74%) pick up their stock from suppliers; 26% get their stock delivered, 22% get free delivery, and 4% pay an average of GHS 30 (US$5.5).
Current Sales Trends for Bed Nets

This section discusses the current sales trends for bed nets on the market and compares these with the sales trends from the 2017 baseline market analysis. It also discusses any observed differences in the sales trends of undifferentiated bed nets versus the differentiated bed nets promoted under the Net Life Campaign\textsuperscript{12}.

Bed Net Sales Trends

Table 8 shows the last time retailers replenished their bed net stock before the end-line retail audit compared to the 2017 baseline retail audit. Most retailers (74\%) replenished their stock within the last three months before the audit; in the baseline retail audit, most (68\%) replenished their stock more than three months before the audit was conducted. In the end-line retail audit, all retailers (100\%) selling LLINs promoted under the Net Life Campaign received their stock within the last three months before the audit.

Table 8: Last Time a Retail Outlet Replenished Stock

<table>
<thead>
<tr>
<th>Last Time Retail Outlet Replenished Stock</th>
<th>2017 Baseline</th>
<th>2019 End-Line</th>
<th>LLINs Promoted under the Net Life Campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Types of Bed Nets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 3 months ago</td>
<td>32%</td>
<td>74%</td>
<td>100%</td>
</tr>
<tr>
<td>4 to 6 months ago</td>
<td>45%</td>
<td>22%</td>
<td>0%</td>
</tr>
<tr>
<td>7 to 12 months ago</td>
<td>11%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>More than 12 months ago</td>
<td>12%</td>
<td>1%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Note: At 2017 baseline, 18 was the average number of bed nets a retailer bought the last time he/she replenished stock; it was 12 pieces at the 2019 end-line.

During the end-line retail audit interviews, retailers had sold 37\% of the stock they last received for all types of bed nets. Retailers stocking the two brands of LLINs (PermaNet and YorKool), promoted under the Net Life Campaign, sold 46\% of the stock; retailers selling PermaNet sold 37\% of their latest stock and those selling YorKool sold 54\%. On average, 89\% of retailers sell at least one of any bed net type per month, compared to 91\% of retailers who sell at least one bed net promoted under the Net Life Campaign per month. Table 9 compares the frequency of sales for all bed net types to that of LLINs promoted under the Net Life Campaign.

\textsuperscript{12} The Net Life Campaign was an advertising effort, through television, radio, and fliers, to disseminate generic information and stimulate demand for the differentiated LLINs. The PMSP project provided seed stock for two local distributors to bring them to market.
Table 9: Length of Time for a Retailer to Sell at Least One Bed Net

<table>
<thead>
<tr>
<th>Frequency of Bed Net Sales</th>
<th>2017 Baseline</th>
<th>2019 End-Line</th>
<th>LLINs Promoted under the Net Life Campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Bed Net Types</td>
<td>All Bed Net Types</td>
<td></td>
</tr>
<tr>
<td>Everyday</td>
<td>4%</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>Every week</td>
<td>20%</td>
<td>29%</td>
<td>22%</td>
</tr>
<tr>
<td>Every 2 weeks</td>
<td>15%</td>
<td>22%</td>
<td>39%</td>
</tr>
<tr>
<td>Every 3 weeks</td>
<td>3%</td>
<td>13%</td>
<td>4%</td>
</tr>
<tr>
<td>Every month</td>
<td>41%</td>
<td>19%</td>
<td>22%</td>
</tr>
<tr>
<td>Every 2 months</td>
<td>5%</td>
<td>4%</td>
<td>9%</td>
</tr>
<tr>
<td>Every 3 months</td>
<td>5%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>Every 4 months or more</td>
<td>7%</td>
<td>4%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Table 10 shows the number of bed nets retailers sold in the month prior to the end-line retail audit. The table compares the sales of bed nets not promoted under the Net Life Campaign to LLINs promoted under the campaign. In the last month before the end-line retail audit, more retailers (87%) sold at least 1–10 LLINs promoted under the Net Life Campaign than the retailers (68%) who sold 1–10 bed nets not promoted under the campaign.

Table 10: Number of Bed Nets Retailers Sold in the Past Month (2019 End-Line Market Analysis)

<table>
<thead>
<tr>
<th>Number of Bed Nets Sold in the Last Month</th>
<th>Bed Nets not Promoted under the Net Life Campaign</th>
<th>LLINs Promoted under the Net Life Campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>No bed nets</td>
<td>11%</td>
<td>9%</td>
</tr>
<tr>
<td>1–10 bed nets</td>
<td>68%</td>
<td>87%</td>
</tr>
<tr>
<td>11–20 bed nets</td>
<td>15%</td>
<td>4%</td>
</tr>
<tr>
<td>More than 20 bed nets</td>
<td>6%</td>
<td>0%</td>
</tr>
</tbody>
</table>

The fastest-selling type of bed net, according to retailers in the audit, is the pop-up bed net—confirmed by 44% of retailers. The undifferentiated rectangular and conical bed nets, whether promoted under the Net Life Campaign or not, are their slowest-selling bed nets. Table 11 shows the percentage of their fastest-selling bed nets.
Table 11: Fastest Selling Bed Nets According to Retailers (2019 End-Line Market Analysis)

<table>
<thead>
<tr>
<th>Type of Bed Net</th>
<th>Percentage of Retailers Stating This Bed Net as Their Fastest-Selling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pop-up bed nets (All pop-up bed nets, including those promoted under the Net Life Campaign)</td>
<td>44%</td>
</tr>
<tr>
<td>Bed nets with zipper (All bed nets with zipper, including those promoted under the Net Life Campaign)</td>
<td>28%</td>
</tr>
<tr>
<td>Undifferentiated bed nets (All traditional rectangular or conical bed nets with no extra features)</td>
<td>14%</td>
</tr>
</tbody>
</table>

Retailers who stocked both LLINs promoted under the Net Life Campaign and those not promoted were asked to indicate which of the two categories of bed nets customers buy more (see Table 12).

Table 12: Retailers’ Opinions on Buying Trends of LLINs Promoted Under the Net Life Campaign versus Not Promoted

<table>
<thead>
<tr>
<th>Retailers’ Experience About Customers’ Purchasing Trend for LLINs Promoted under the Net Life Campaign versus Not Promoted</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>More customers buy LLINs promoted under the campaign than other types not promoted</td>
<td>38%</td>
</tr>
<tr>
<td>Customer sales are similar for both LLINs promoted under the campaign and those not promoted</td>
<td>27%</td>
</tr>
<tr>
<td>Fewer customers buy LLINs promoted under the campaign than other types of bed nets not promoted</td>
<td>8%</td>
</tr>
<tr>
<td>I don’t know/I have not tracked the differences in sales</td>
<td>27%</td>
</tr>
</tbody>
</table>

Fourteen percent of retailers reported that 15% of their customers ask for LLINs with the seal of approval promoted under the Net Life Campaign. Retailers also stated that 70–80% of the of their customers who ask for a net with a seal leave without buying any bed net if that LLIN is unavailable. These findings point to customers wanting genuine LLINs.

**Bed Nets Sales Promotion In-Store**

Only 2% of retail outlets had any in-store point-of-sale advertising. For the 2% that did, 13% had a pull-up banner, 38% had posters, and 50% had flyers. Of all the advertising found in shops, distributors provided 88%, including both generic and brand-specific advertising and retailers provided 13%. Another important observation made during the audit was the lack of attractive and visible shelving (shelf space) for bed nets.
in retail outlets, compared to other products. In most cases, the customers could not see the bed nets for sale.

**Key Takeaways**

Differentiated bed nets, whether promoted under the Net Life Campaign or not, sold better than all other types of bed nets. The fastest-selling was the pop-up bed net (according to 44% of retailers) whether it was promoted under the Net Life Campaign or not.

LLINs promoted under the campaign outsell bed nets that were not promoted. For instance, among retailers who sell both LLINs promoted under the campaign and bed nets not promoted, most (38%) said the LLINs promoted under the campaign outsell LLINs that are not promoted. Also, in the last month before the end-line retail audit, a larger number of retailers (87%) sold at least 1–10 LLINs promoted under the campaign than the number of retailers (68%) who sold 1–10 bed nets not promoted.

The findings also showed that consumers considered the seal of approval useful. At least, 70–80% of the 15% of customers who ask specifically for an LLIN with the seal of approval leave without purchasing any bed net if that LLIN is unavailable.

The end-line market analysis also found minimal in-store point-of-sale advertising for bed nets; only 2% of all retail outlets visited had any. Also, bed nets in retail outlets were not visibly and attractively displayed on shelves, compared to other types of products.
Net Life Campaign
The PSMP project initiated a LLIN market catalyzing campaign in Ghana called the “The Net Life Campaign” in response to the baseline market analysis findings that revealed a viable, but latent, demand for differentiated bed nets by middle-class Ghanaian consumers. The campaign was an advertising effort—television, radio, and flyers13—to disseminate generic information and stimulate demand for WHOPES-recommended differentiated LLINs, particularly among middle-class Ghanaians—the primary target group willing to pay for LLINs that meet their preferences. Under the campaign, the PSMP project also provided a seal of approval sticker (see Figure 7) that was affixed to the packaging of WHOPES-recommended LLINs promoted under the campaign; it confirms to consumers the authenticity of the bed nets they are buying.

Figure 7: Seal of Approval for Net Life Campaign Nets

This section details the impact of the Net Life Campaign by assessing retailers’ awareness of the campaign, whether the Net Life Campaign LLINs were widely available in retail outlets and if the seal of approval affected consumer trust.

Awareness Levels of the Net Life Campaign
The end-line market analysis measured the level of awareness of the Net Life Campaign ads among retailers. To assess the overall levels of awareness of the campaign ads, the retailers were shown the TV ads, radio ads, and flyers to determine if they recalled ever being exposed to the ads at least once in the four months before the retail audit interviews.

The overall level of awareness of the campaign ads among retailers was 47%. When the retailers were shown copies of the TV, radio, or flyer ads, almost half (47%) recognized at least one of the ads they saw on at least one occasion in the last four months prior to the audit. Even though the ads aired on television and radio for a short time (two months), 47% remembered them. The highest level of awareness of the Net Life Campaign was in the Ashanti region, with 57% of retailers confirming they remembered at least one ad; the Western region followed with 54% awareness. The Greater Accra region had the lowest level of awareness (30%).

Figures 8 and 9 show the awareness levels by region and by urban and rural areas.

13 Advertisements disseminated under the Net Life Campaign: https://www.privatesectormalaria.org/catalyzing-the-commercial-sector/
Of the three media channels used for the campaign, TV had the highest recall, with 39% of retailers stating they saw the TV ad, followed by radio (18%), and flyers (12%). The TV was most effective in the Western region (46%). In both urban and rural areas, TV was again the most effective channel for creating awareness of the campaign, with 40% of urban retailers and 31% of rural retailers recognizing the ads. Overall, flyers were the least effective, with only 12% of retailers saying they had seen a campaign flyer.

Figures 10 and 11 show the awareness levels across the media channels used for the Net Life Campaign by region and by urban-rural areas, respectively.

Figure 10: Awareness Across Media Channels by Region
Figure 11: Awareness Across Media Channel by Urban-Rural Areas
Availability of Net Life Campaign Promoted Bed Nets on the Market

The end-line market analysis assessed the availability of LLINs promoted under the Net Life Campaign. Of all the bed nets found in retail outlets, 17% were LLINs promoted under the Net Life Campaign, which had the gold seal of approval—the WHOPES-recommended brands: PermaNet and Yorkool. Only 11% of retail outlets across the three regions carried these nets. For the retailers (11%) selling LLINs promoted under the campaign, most retailers (57%) received their stock in one–three months, 17% about two–four weeks, and 26% about one–two weeks before the retail audit interviews. The types of retail outlets that stocked LLINs promoted under the campaign were predominantly pharmacies and chemical shops (95%), all in urban areas. Figure 12 shows the availability of LLINs promoted by the campaign nets, by region.

Figure 12: Availability of LLINs Promoted under the Net Life Campaign, by Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall (All three regions)</td>
<td>11%</td>
</tr>
<tr>
<td>Ashanti</td>
<td>10%</td>
</tr>
<tr>
<td>Greater Accra</td>
<td>13%</td>
</tr>
<tr>
<td>Western</td>
<td>8%</td>
</tr>
</tbody>
</table>

Key Takeaways

Of bed nets found on the market, 17% were LLINs promoted under the Net Life Campaign, which had the gold seal of approval, and were available in 11% of retail outlets. Despite the relatively short time (two months) that the campaign ads were disseminated—TV, radio, and flyers—they reached almost half of retailers (49%) in the study area. The strongest awareness of the campaign was created in the Ashanti region (57%), followed by Western (54%), and Greater Accra (30%). The TV ads were the most effective at creating awareness, with 39% of retailers stating they were exposed to them at least once.
Looking Forward: The Future of Commercial Retail of LLINs in Ghana

The PSMP project took the first coordinated steps toward catalyzing the retail market for LLINs in Ghana. As the PMSP’s direct involvement in supporting the retail market for LLINs in Ghana closed in September 2019, it is essential to reflect on the next steps. How can the gains achieved by the PSMP project be consolidated and improved to ultimately make the Ghanaian market for LLINs vibrant, profitable, and self-sustaining?

Answers to a few key questions show what the future of commercial retail of LLINs in Ghana could look like and the actions that market players need to take advantage of to sustain a marketplace for the commercial retail of LLINs. The key questions are:

- What specific steps do market players need to take to follow up on the opportunities in the commercial retail market for LLINs?
- After the PSMP project ends, will supply chain players (manufacturers, distributors, sub-distributors, and retailers) actively participate and invest in stimulating demand?
- What are some lessons learned from the PSMP project, and how should this influence the actions of market players going forward?

Capitalizing on the Market Opportunities

What identified opportunities in the commercial retail LLIN markets do market players need to follow? To profitably take advantage of the opportunities, interested market players must take strategic initiatives in specific areas to stimulate the latent demand for differentiated LLINs. During the 24 months between the baseline and end-line market analysis, the PSMP project led some of these initiatives. Table 13 summarizes the market catalyzation efforts made by PSMP, the results and the recommendations for the future.

Table 13: Strategic Initiatives Required to Capitalize on Market Opportunities

<table>
<thead>
<tr>
<th>Strategic Initiatives Required to Capitalize on Market Opportunities</th>
<th>Actions Taken</th>
<th>Results Achieved</th>
<th>Way Forward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bring to market differentiated LLINs that are convenient (easy to hang, and easy to enter and exit); comfortable (soft material texture), and aesthetically attractive (improved styles and color variety)</td>
<td>In February of 2018, the PSMP project presented the baseline market analysis findings identifying the demand for differentiated LLINs by middle-class Ghanaian consumers to manufacturers. They encouraged manufacturers to invest in the production of</td>
<td>Yorkool agreed to produce differentiated LLINs for the market. The differentiated LLINs brought to market outsold the undifferentiated LLINs; pop-up LLINs are the fastest-selling bed net on the market, according to most</td>
<td>More manufacturers of WHOPEs-recommended brands must invest in producing differentiated LLINs, that meet consumer preferences, for the market. Local distributors, who received seed funding from the PSMP project, must reinvest into</td>
</tr>
<tr>
<td>Strategic Initiatives Required to Capitalize on Market Opportunities</td>
<td>Actions Taken</td>
<td>Results Achieved</td>
<td>Way Forward</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
</tr>
<tr>
<td>Differentiated LLINs. PSMP provided seed stock to two local distributors to import differentiated LLINs to test the Ghana market.</td>
<td>retailers (44%).</td>
<td>bringing differentiated LLINs to the commercial retail market for LLINs in Ghana.</td>
<td></td>
</tr>
<tr>
<td>Position the differentiated LLINs to appeal to middle-class consumers who already spend money on other mosquito control products to protect against malaria. PSMP undertook the Net Life Campaign, which involved generic (non-brand specific) advertising of differentiated LLINs targeted at middle-class Ghanaians on TV, radio, and print.</td>
<td>The campaign generated awareness of differentiated LLINs among 47% of retailers in the study area. The campaign created a pull demand among customers—retailers (14%) stating that about 15% of customers entering their shops, in the last four months prior to the retail audit, requested LLINs promoted under the campaign. More retailers want to stock differentiated LLINs. They (78%) are likely to stock differentiated LLINs in the next 12–18 months.</td>
<td>Manufacturers and local distributors must continue the advertising campaign started by the PSMP project, by investing in above-the-line and below-the-line advertising to draw the attention of target consumers to the availability of differentiated LLINs on the retail market.</td>
<td></td>
</tr>
<tr>
<td>Invest in brand awareness using a pull advertising campaign that reinforces the differentiated features of the LLINs. No actions taken to build awareness for specific brands as this was beyond the scope of the project.</td>
<td>No result</td>
<td>Brand awareness for specific LLINs is weak among consumers. Manufacturers and local distributors should focus on brand-specific advertising to build go-to LLIN brands that consumers trust.</td>
<td></td>
</tr>
<tr>
<td>Strategic Initiatives Required to Capitalize on Market Opportunities</td>
<td>Actions Taken</td>
<td>Results Achieved</td>
<td>Way Forward</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
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<td>-----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Cultivate other retail channels, beyond pharmacies and chemical shops, that are widely and easily accessible in local communities</td>
<td>No specific actions taken to cultivate more and diversify retail channels.</td>
<td>Although no specific actions were taken, the number of retail outlets selling bed nets increased from 7% in 2017 to 8% in 2019. The increase could be because of the generic advertising under the Net Life Campaign, pushing retailers to stock bed nets in response to increased customer requests for bed nets resulting from the campaign.</td>
<td>Manufacturers and local distributors must invest in brand specific advertising.</td>
</tr>
</tbody>
</table>

**Continued Participation and Investments by Supply Chain Players**

To achieve the goals of creating a self-sustaining commercial retail market for differentiated LLINs in Ghana, supply chain players (manufacturers, distributors, and sub-distributors) must commit to investing in various ways to continue stimulating the retail market after the PSMP project ends.

Manufacturers’ interest in directly investing in stimulating Ghana’s commercial retail market for differentiated LLINs is moderately cautious. One manufacturer of WHOPES-recommended LLINs indicated that they may invest directly in Ghana’s commercial retail market, but this decision would be based on how their partnership with their local distributor develops. The manufacturer wants structured feedback from its local distributors on market activities in Ghana. While the manufacturer acknowledged the PSMP project’s market analysis report was a good first step to understanding the Ghanaian market for commercial retail of LLINs, they need further continuous, systematic, and detailed feedback from their local distributors. For instance, the manufacturer would like detailed feedback on the differentiated LLINs promoted under the Net Life Campaign, including:

- sales channels used to sell the differentiated LLINs received by its local distributor
- effectiveness of each type of sales channels used
- kinds of differentiated LLINs that sold best and by how much was sold
- retail prices
- profit margins for distributors and retailers
Distributors have a moderate to high interest in investing in the commercial retail market for LLINs in Ghana going forward. However, they can only invest if manufacturers support their activities in Ghana. They want manufacturers to provide more flexible payment terms, instead of the full upfront payment usually required before LLINs ship to Ghana. Local distributors perceive the inflexible credit lines as meaning the manufacturers do not want to share the business risk. So, while distributors also expressed an interest in investing to stimulate demand for differentiated LLINs, they need manufacturers to share the risk; they do not have the financial resources for every aspect of local catalyzation of the market after PSMP ends. Distributors would like to invest in building brand awareness for LLINs through media ads and cultivate new sales channels outside the current ones, but they lack the financial resources.

Most sub-distributors (83%), for now, are undecided about investing directly in any market development and catalyzation activities, because they see this as primarily the responsibility of distributors and manufacturers. The sub-distributors stated that the sub-distribution of bed nets is just a small part of the product lines they distribute through their sales channels to retailers. They indicated that, from their experiences of wholesaling other types of products, it is the responsibility of distributors and manufacturers to invest in demand stimulation activities. To them, investing directly in stimulating demand for differentiated bed nets would be unusual for their business operating model. About 33% of sub-distributors said they would only consider investing if they become distributors and had a direct relationship with the manufacturers. However, they would only become a distributor if they observed the market for some time and are sure that the demand for differentiated LLINs has increased significantly from what it is now.

In the end-line retail audit, retailers were also asked how likely they are in the next 12–18 months to stock differentiated LLINs. Table 14 shows the responses.

Table 134: Likelihood of Retailers Stocking Differentiated LLINs in the Next 12–18 months

<table>
<thead>
<tr>
<th>Likelihood of Retailers Stocking Differentiated LLINs</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very likely</td>
<td>49%</td>
</tr>
<tr>
<td>Likely</td>
<td>29%</td>
</tr>
<tr>
<td>Not sure</td>
<td>14%</td>
</tr>
<tr>
<td>Unlikely</td>
<td>4%</td>
</tr>
<tr>
<td>Very unlikely</td>
<td>3%</td>
</tr>
</tbody>
</table>

Overall, retailers strongly expected the demand for differentiated LLINs (65%) to increase, and a significant majority (78%) interested in stocking differentiated LLINs in the future. These positive sentiments further highlight the demand opportunities for differentiated LLINs on the commercial retail market.

Lessons Learned from the PSMP Project

The baseline and end-line market analyses, conducted in 2017 and 2019 respectively points to some significant market accomplishments and challenges.

Key Accomplishments
• Through the 2017 baseline market analysis, the PSMP project clearly identified a commercially market for differentiated LLINs in Ghana. The size of the national market was conservatively estimated at about 650,000 LLIN sales in 2019, increasing to 2.5 million sales by 2022. Moderate sales estimate was about 2 million in 2019, rising to 6.6 million by 2022, and aggressive sales estimates was about 4.2 million in 2018, increasing to 11.0 million by 2022.
• The project identified the type of differentiated LLINs that middle-class target consumers wanted and how these should differ from the freely distributed LLINs. The middle-class consumer wants an LLIN that is easy to use, convenient, comfortable, and aesthetically attractive. A convenient LLIN must be easy to hang, enter and exit, and provide access to nearby personal items. A comfortable LLIN must be spacious inside, have the right texture of material (polyester), and the insecticide treatment must not cause discomfort. An aesthetically pleasing LLIN must not distract from the décor of their bedrooms. The middle-class consumer wants an LLIN that, when hung, does not make the bedroom look cluttered, has a pleasing shape and design, does take up space inside the LLIN, and has more color options than the usual white and blue. The baseline study also found that changing LLIN attributes from the least to most attractive combinations increases the average demand. The study estimates that by changing the shape, size, and mode of entry of LLINs—such as from rectangular to conical, double-size to queen-size, and mode of entry and exit from lift overhead to zipper entry design—demand increases from 41.2% to 50.7%.
• The market test for the sale of differentiated LLINs promoted under the Net Life Campaign proved that with the right investments in the short- to medium-term, differentiated LLINs could be commercially viable. Differentiated bed nets, including those promoted under the campaign, sold better than all other types of bed nets. According to 44% of retailers in the 2019 end-line retail audit, the fastest-selling bed net was the pop-up bed net.

Key Challenges
• Supply chain players’ are concerned that PSMP’s support for stimulating the market ended before they could consolidate the gains from the market efforts, especially for the Net Life Campaign, which was considered too short to solidify the impact of this PSMP intervention.
• Manufacturers are apprehensive about investing directly in Ghana’s commercial retail market for differentiated LLINs and they want local distributors to take the lead role.
• Local distributors lack the financial strength to capitalize on the market opportunities identified by the PSMP project.
• Retailers want more flexible payment terms with their suppliers that do not require them to pay full upfront cost for their bed net stock.
Key Takeaways
Overall, supply chain players’ interest in taking over market catalyzing activities, after the PSMP project ends, were low to moderate, because:

- Manufacturers appear risk-averse and are not willing to make direct investments into Ghana’s commercial retail market for LLINs. Manufacturers, for now, want to limit their involvement in the value chain only by supplying differentiated LLINs to local distributors with no additional investment.
- Distributors lack the financial resources to continue the investment, LLIN reorders and advertising, from where the PSMP project ended.
- Sub-distributors do not feel responsible for investing in market catalyzing activities.

The low to moderate interest of suppliers to continue the market catalyzation activities of the PMSP project could result in minimal future investments by suppliers into the retail market for LLINs, and this could impede the gains made by the PMSP project going forward.
Conclusion

Malaria prevention programs globally, including in Ghana, are falling short of funding. A principal mandate of the PSMP project was to investigate whether the commercial retail market for LLINs in Ghana was a viable and sustainable pathway to compliment other existing free distribution channels. To achieve this, the PSMP project commissioned a market analysis of the commercial retail market in Ghana, which was conducted in two phases—(1) a baseline market analysis in 2017 to understand the then current landscape for the commercial retail of LLINs and to identify, if any, the commercial viability of selling LLINs to the public without cannibalizing free LLIN distribution—which is critical for the section of the Ghanaian population who cannot afford to buy LLINs. The second phase, a follow-up end-line market analysis, was completed two years after the baseline market analysis. It reviewed any changes in the commercial retail market for LLINs during the two years; evaluated the impact of the market catalysis interventions initiated by the PSMP project; and also to gauge the interest of supply chain players—manufacturers, distributors, sub-distributors, and retailers—in continuing the market catalysis activities started by the PSMP project, when the PSMP project ends in 2019.

The key findings from the end-line market analysis are as follows:

- In 2019, 8% of retail outlets were selling bed nets; a marginal improvement on the 7% of retail outlets selling bed nets in 2017. Pharmacies and chemical shops stocked almost half (49%) of all bed nets in 2019.
  - The widespread availability of bed nets is one factor to sustaining the retail market. With about 75% of target customers saying they do not know where to buy a bed net in their community and 33 minutes as the average travel time it takes a consumer to find a retailer that sells bed nets, it is crucial to have many more types of retail outlets—besides pharmacies and chemical shops—stocking LLINs, especially convenience shops and supermarkets, which make up most of all retail outlet (87% in 2019).
- The 24 months between the baseline market analysis and end-line market analysis saw some changes in the types of bed nets available for consumers. Generally, retail outlets are stocking more options for bed nets than before. Only 8% of retailers are stocking one kind of bed net in 2019, compared to 2017, when 52% of retailers stocked only one kind. The market has also seen both minor and significant changes to the types of bed nets on the market for brands, shape, size, availability of undifferentiated and differentiated bed nets, insecticide treatment, and material texture.
  - Fewer brands of bed nets are available on the market in 2019 (14 brands) than in 2017 (16 brands).
  - Larger bed nets are available on the market in 2019 than in 2017. Currently, in 2019, the number of larger bed nets (queen-size, king-size) has increased by 6%.

Shapes of bed nets on the market have remained almost the same during the two years. Of bed nets on the market, 71% are rectangular, considered more spacious by consumers, and 29% are conical, considered easier to hang.

Most (95%) bed nets on the market in 2019 were made from polyester material, an increase from the 83% found during the baseline market analysis, which is a direct response to consumer preference.

Of all bed nets in retail outlets in 2019, 98% are insecticide-treated compared to 95% found during the baseline retail audit.

- The average retail price for bed nets increased by 32% between 2017 and 2019. The end-line market analysis found that the current average retail price for a bed net is GHS 25 (US$4.64).
- The end-line market analysis found that most retailers do not have flexible payment terms with their suppliers; 71% of retailers had to pay in full for their stock upfront. This could impact the ability of retailers to carry sufficient volumes of stock or deter them from carrying bed net stock entirely. If retailers could arrange for flexible payment terms, it could help expand the number of retail outlets carrying bed nets and make them more widely available for consumer purchase.
- The commercial retail market for LLINs has seen fewer suppliers willing to offer free delivery of bed net stock directly to the retail outlets. In the 2019 retail audit, only 22% of suppliers offered free delivery of stock to retail outlets compared to 27% in 2017. Currently, the majority (71%) of retailers use public transport to pick up stock, which costs them an average of GHS 29 (US$5.31) each time they replenish.
- The Net Life Campaign was an advertising drive on TV, radio, and print materials to promote differentiated bed nets that consumers preferred. The end-line market analysis assessed the awareness among retailers about the campaign. Even though it lasted for only two months, almost half (47%) of all retailers said they were exposed to the campaign ads, either through TV (39%), radio (18%), or flyers (12%).
  - LLINs promoted under the campaign had a gold seal of approval affixed to the packaging; 17% of all bed nets found in retail outlets were being promoted under the campaign.
- Sales trends for bed nets have improved since the 2017 baseline market analysis.
  - The end-line market analysis showed that 89% of retailers sell at least one bed net per month compared to 83% in the baseline market analysis; 91% of retailers sell LLINs promoted under the Net Life Campaign.
  - The general sales pattern for differentiated bed nets and bed nets being promoted under the campaign were slightly better than undifferentiated bed nets. In the last month before the retail audit, 68% of retailers sold 1–10 undifferentiated bed nets compared to 87% of retailers reporting selling 1–10 LLINs differentiated bed nets within the same period. Also, 38% of retailers selling both LLINs promoted under the campaign, and bed nets not promoted by the campaign, said more customers buy LLINs promoted by the campaign.
  - The seal of approval affixed to LLINs being promoted under the campaign was a useful indicator of authenticity for consumers. According to retailers, 70–80% of customers who ask specifically for bed nets with the seal of approval leave without buying any net if they do not have one in stock.

The end-line market analysis also gauged the future interest of supply chain players to invest in activities that would stimulate the commercial retail market for LLINs after the PSMP project ended in September 2019. Overall, interest by supply chain players to continue the market catalyzation activities of the PSMP project was low to moderate, because:
• Manufacturers hesitate to risk direct investments into Ghana’s commercial retail market for LLINs; for now, they want to limit their involvement in the supply chain to supplying differentiated LLINs to local distributors.
• Local distributors lack the financial resources to continue the investment from where the PSMP project ended its efforts and would like manufacturers to support them by offering more flexible payment terms for stock.
• Sub-distributors do not see market catalyzation as their responsibility.

Overall, the market analyses, at baseline and end-line, revealed some interesting findings that existing market players and new entrants into the commercial retail market for LLINs in Ghana can leverage. The 2017 baseline market analysis provided a detailed overview of the current landscape for the commercial retail market of LLINs in Ghana. Furthermore, the 2017 baseline market analysis identified opportunities for catalyzing a commercial market for LLINs in Ghana, and served as the roadmap that informed the PSMP project’s market interventions.

The 2019 end-line market analysis is a detailed overview of how the landscape for the commercial retail of LLINs has evolved between 2017 and 2019. The analysis showed that the market is responding to some of the consumers’ needs with the current availability of differentiated bed nets on the market. Additionally, the analysis showed higher sales trends for differentiated bed nets, including LLINs promoted under the Net Life Campaign, compared to undifferentiated bed nets. This validates the baseline market analysis findings that consumers prefer differentiated bed nets.