



Guinea, Liberia and Sierra Leone

December 2015: Coping improves in the region for the third consecutive month.

Tracking food security during the Ebola Virus Disease (EVD) outbreak

Highlights

- In December, coping improved across the nation in Liberia. Improvements in Guinea and Sierra Leone are less broad but positive in certain groups and coping strategies.
- Wages and terms of trade improved again this month in Sierra Leone.

National coping levels

The Reduced Coping Strategies Index (rCSI) measures the frequency and severity of the mechanisms households employ when faced with food shortages such as skipping meals or reducing the size of portions. A higher score indicates households are resorting to more frequent and/or severe negative coping strategies. Detailed information on the rCSI can be found [here](#).

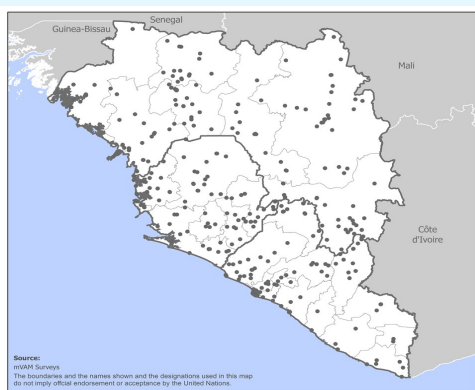
For the last 3 months, there has been a general trend of improvement in coping strategies in the three countries. In December, the rCSI improved among repeat-respondents (those who reported in the current and previous survey round) on average, -1.7 points per respondent***¹ in December. In Guinea and Sierra Leone, improvements were less broad this month but were observed in certain groups and for certain coping strategies.

Figure 1: Average rCSI levels, December 2015



Methodology

December 2015 marked the 15th round of remote data collection for the 3 countries. In Liberia, 1,150 surveys were completed; in Sierra Leone, 1,020 surveys were completed and in Guinea, 945 surveys were completed. In all three countries, the surveys were conducted from the 19th and 20th of December. The adjacent map shows the cell phone towers from which responses were received.



Since September 2014, WFP has been using text messaging (SMS) to poll a sample of respondents in the Ebola affected countries of Guinea, Liberia and Sierra Leone. Participants are randomly selected from a database of mobile subscribers and are asked socio-demographic questions, coping behavior questions, the prices of 3 commodities and manual labour wages as well as an open-ended question on food security. An airtime credit incentive of 50 cents is provided to respondents who successfully complete the survey to increase completion rates and encourage repeat participation (maintaining a panel). When interpreting results, readers are cautioned to note that SMS surveys contain an inherent response bias as well as biases towards better-off and literate households. Additional information on methodology is available [online](#).

Ebola Update: First month without new incidence of Ebola since the outbreak

No new cases of Ebola were discovered in December 2015. After 42 days since the last confirmed case, the WHO declared human-to-human transmission of Ebola over in Guinea on 29 December 2015. Without the emergence of new cases, Liberia will be declared Ebola free on 14 January 2016. Sierra Leone continues to be Ebola free. While the region moves towards a recovery operation, all three countries will continue surveillance.
[WHO Ebola Situation Report, 30 December 2015](#)

In Guinea, use of negative coping strategies have declined since October. In November there were definitive improvements in the rCSI. This month, while there are no statistically significant changes in rCSI at national levels or sub-national levels, improvements among certain wealth groups and in certain coping strategies are positive. Among the second wealthiest toilet type group, those with access to a shared flush toilet (n=85), there was a large average improvement in the rCSI of -2.3 per respondent.**¹ There were also improvements in the average number of days repeat respondents (n=524) used negative coping strategies: on average households reduced the number of days (-0.7) ** they had borrow or rely on help and reduced the number of days (-0.4)***¹ they had to eat on less expensive food. Changes in the rCSI between November and December by sex of the head of the household were not statistically significant, although in December, the average amount of coping, measured by the rCSI, was higher for female-headed households (14.6) than male-headed households (13.2).**²

In Liberia, there have also been improvements in coping strategies since the beginning of the harvest season. Comparing November to December, there are clear improvements in coping and the national rCSI improved on average -1.7***¹ points per household among repeat respondents (n=631). At a sub-national level, the rCSI improved on average -2.1**¹ points per household in the Western region. There were also statistically significant improvements in the duration of coping in all of the coping strategies. Looking at rCSI by the sex of the head of household, there was a statistically significant improvement in the rCSI for male-headed households and the average rCSI decreased -1.7***¹ among repeat respondents (n=481) this month. In December, the average rCSI was slightly higher for female-headed households (14.6) than male-headed households (12.9).*²

In Sierra Leone, similar to Guinea, while no statistically significant change in rCSI at national or sub-national levels were observed this month, there were improvements in coping among certain wealth groups and in specific coping strategies. In December, there were improvements among repeat respondents (n=331) in the number of days households had to limit portion sizes (-0.5)** and reduce their number of meals (-0.4).***¹ Examining coping by wealth group, improvements are observed in the largest wealth group. Those with access to a cement pit latrine (n=528) improved on average -1.7 points per respondent.*¹ Changes in the rCSI by sex of the head of the household were not statistically significant, although in December, the average amount of coping, measured by the rCSI, was higher for female-headed households (13.9) than male-headed households (11.8).**²

Figure 2: Average rCSI: Guinea, December 2015

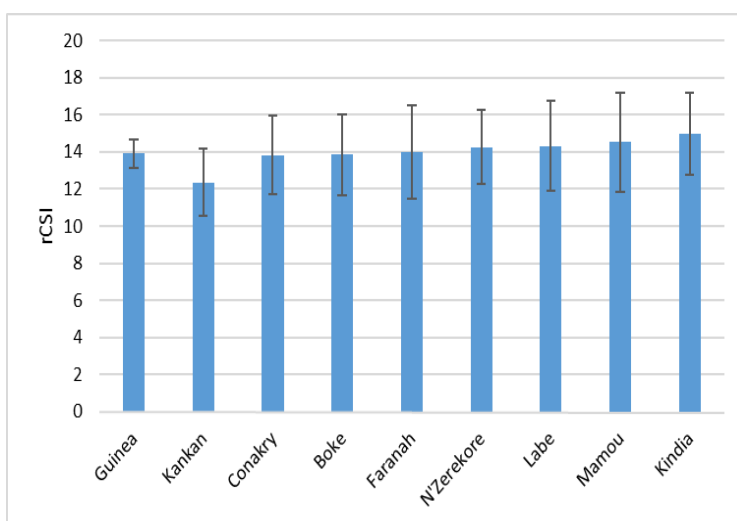


Figure 3: Average rCSI: Liberia, December 2015

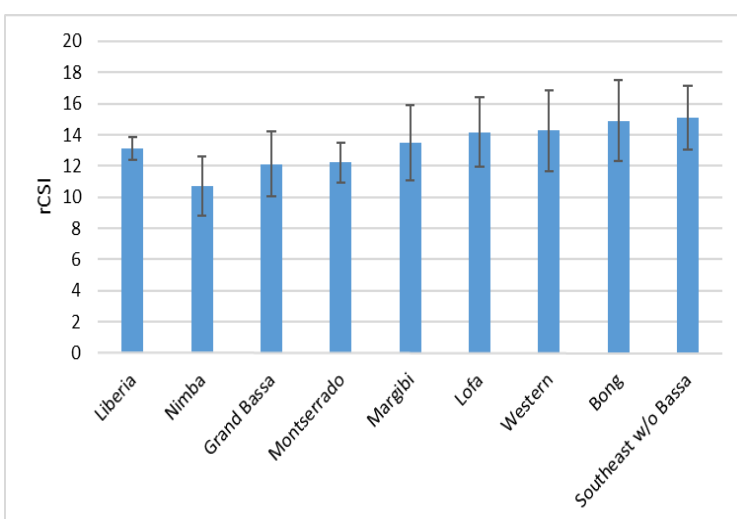
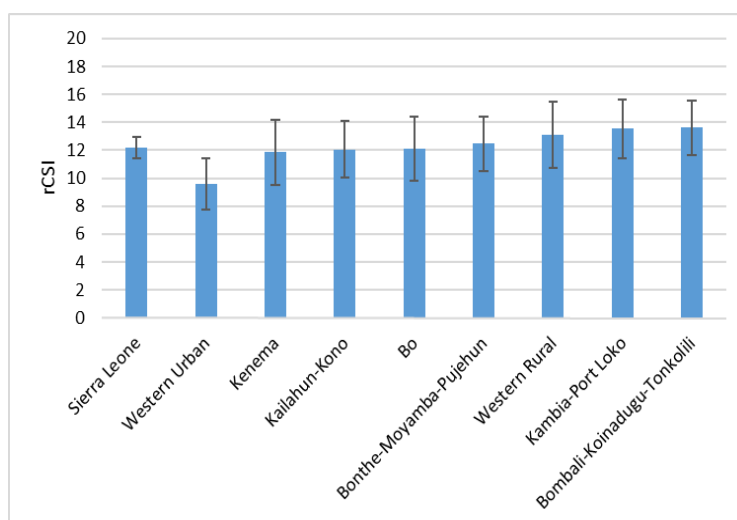


Figure 4: Average rCSI: Sierra Leone, December 2015



(error bars for all three graphs indicate 95% confidence intervals)

Slight changes palm-oil prices

Looking at the seasonal calendar, December is situated in the middle of the harvest season and peak labour demand in [Guinea](#), in the middle of the rice harvest in [Liberia](#) and the beginning of cash crop marketing season in [Sierra Leone](#). In all three countries, climactic and environmental conditions have been generally favorable for crop yields and agricultural activities, thus creating increased food availability and economic opportunity.

Examining changes in national prices between November and December, we observe no statistically significant change in national or sub-national prices. As price changes can often be too slight to detect on a month to month examination, to examine the broader movement of prices, we compared December prices against prices from the beginning of the year, January 2015 for Liberia and Sierra Leone and June 2015 for Guinea. For the time periods compared, the price of palm oil has risen slightly in Guinea and Liberia. In Guinea, the price of a half-litre of palm oil has increased 5% since June.**³ In Liberia, the price of palm oil in December 2015 is 3% higher than the beginning of the year, January 2015.*³

Table 1: Prices in Guinea, Liberia and Sierra Leone, December 2015

Country	December Prices (in local units and currency)			
	Imported rice	Local rice	Palm oil	Manual Labour Daily Wage Rate
Guinea	4271 (GNF/kg)	5071 (GNF/kg)	4776 (GNF/half-litre)	23727 (GNF/day)
Liberia	27.1 (LRD/cup)	26.9 (LRD/cup)	27.2 (LRD/pint)	234 (LRD/day)
Sierra Leone	1034 (SLL/cup)	965 (SLL/cup)	1781 (SLL/pint)	11797 (SLL/day)

Improvement in wages and terms of trade

Labour wages are important measures of food security as they contribute to understanding economic activity and purchasing power. In November, reported daily wages for manual labour increased in Sierra Leone and this trend continued in December. Examining daily wage rates for December there was a statistically significant increase of 6% for manual labour wages in Sierra Leone.*² Comparing wage rates to beginning of the year for Liberia and Sierra Leone (June 2015 for Guinea) to December, wages have increased 9%*** in Liberia and 6%**³ in Sierra Leone.

Terms of trade (ToT) determine purchasing power and illustrate the quantity of a certain food commodity that individuals can barter for a day's worth of manual labour. Terms of trade in many areas and for many commodities have been improving since the end of the lean season and the start of the harvest. This month, gains in national terms of trade for all commodities: daily wage to imported rice (12 from 11.3), daily wage to local rice (12.9 to 12.3) and daily wage to palm oil (7.1 from 6.7) are observed in Sierra Leone.**²

Perceptions of food security in December

At the end of the questionnaire, participants are asked an open-ended question, "Tell us about the food situation in your community." To analyse these responses and gauge perceptions of food security, we use the sentiment analysis tool [Reputstate](#) which calculates the "polarity" of each response — a measure of how positive/negative the statement is on a scale of -1.0 to +1.0.

Figure 5: Manual labour wages, January — December 2015

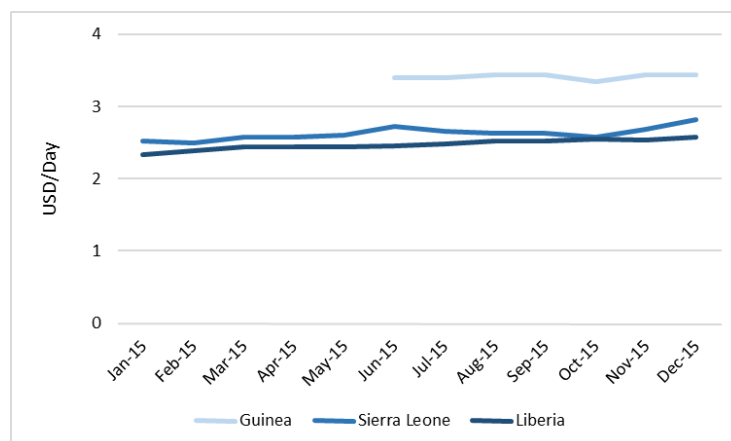


Figure 6: Average sentiment scores, December 2015



In December, the mean sentiment score in Guinea was very slightly positive in Guinea (0.004) while mean sentiment scores for Liberia (-0.01) and Sierra Leone (-0.04) were very slightly negative.

In Guinea, the change in mean sentiment score this month was not statistically significant at national level or regional levels. Responses in Guinea are often less detailed than responses from Liberia and Sierra Leone. Out of 945 responses this month, only a small percentage mentioned specific causes or explanations relating to food security. Eleven responses mentioned positive improvements as a result of harvest activities while two responses mentioned that returns from harvest were less than expected this year. Relatively the same number of respondent mentioned unemployment (six this month compared to seven in November) as an issue affecting food security. This round, two respondents stated that the negative effects of Ebola on food security persist.

In Liberia, among 644 repeat respondents nation-wide, average sentiment scores grew slightly more positive (+0.02) for each respondent.*¹ In Margibi, among 59 repeat respondents, average sentiment per respondent grew slightly more negative (-0.03).**¹ Out of 1,150 responses, three themes: harvest, unemployment and transportation were mentioned the most frequently and in nearly equal proportion. Last month, 39 respondents made negative reference to transportation conditions. In December, approximately half as many (20) cited that poor transportation increased the price and ability to purchase foods. Six responses (compared to one response last month) mentioned that transportation has improved. Specifically, one respondent mentioned, "This time of the year, food is not a major problem. December-July are the best time to live in Liberia. It is the dry season, transport cost is very low." This month, 20 participants mentioned positive improvements due to the harvest, while two respondents reported crop damage and less than expected returns. Twenty-one respondents mentioned unemployment and underemployment. Finally, three respondents mentioned Ebola this month. Two negative responses mentioned that Ebola still has a detrimental effect on communal food security while one response stated that food security levels were improving to pre-outbreak levels.

In Sierra Leone, the change in sentiment score this month was not statistically significant at the national level or lower levels. Out of 1,020 responses, positive improvements due to the harvest stood out as the single most cited factor food security mentioned by participants. Although slightly less than last month (39), this month 32 respondents mentioned harvest activities positively while three respondents mentioned less than expected and damaged yields from harvest. This month, six participants mentioned difficulties due to transportation and 14 cited problems caused by unemployment. In December, 10 respondents (compared to 15 in November), stated that the adverse effects of Ebola on food security are still being experienced while six respondents mentioned that food security levels were approaching pre-outbreak levels.

Figure 7: Word cloud for Guinea, December 2015



Figure 8: Word cloud for Liberia, December 2015

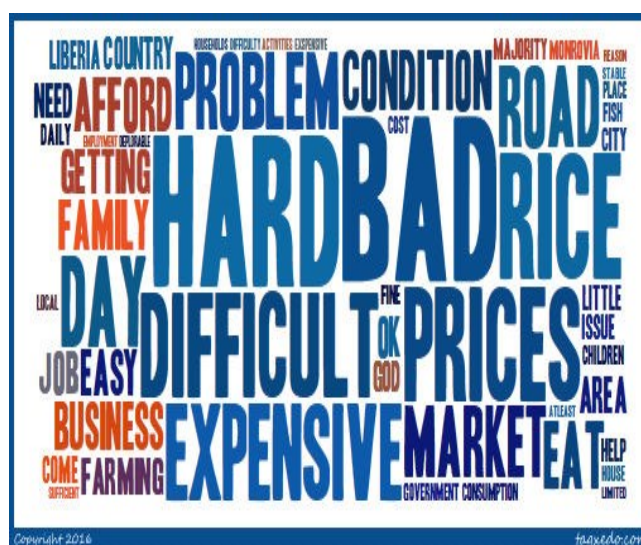


Figure 9: Word cloud for Sierra Leone, December 2015



Conclusions and Outlook

Since October, our data shows improvements in household food security. The proportion and intensity of households using negative coping strategies has been declining. While prices have remained generally stable, wage rates in Sierra Leone have increased and created better terms of trade and household purchasing power. With the abatement of Ebola and continued food availability and economic opportunity expected, food security conditions should remain generally favorable up to the start of the lean season.

References

1. The Coping Strategies Index:
http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp211058.pdf
2. Disclaimer and Methodological Notes for mVAM ebola-affected regional bulletins
http://vam.wfp.org/sites/mvam_monitoring/Read_Me.pdf
3. WHO Ebola Situation Report, 30 December 2015:
<http://apps.who.int/ebola/current-situation/ebola-situation-report-30-december-2015>
4. FEWS NET's seasonal calendars for Guinea, Sierra Leone and Liberia:
http://www.fews.net/sites/default/files/styles/large/public/Guinea%20Oct_0.png
http://www.fews.net/sites/default/files/styles/large/public/Liberia%20Apr_0.png
http://www.fews.net/sites/default/files/styles/large/public/Sierra%20Leone%20Apr_0.png
5. Repustate Sentiment Analysis Platform:
<https://www.repustate.com/text-analytics-api/>

Reporting statistical tests and significance level

Except where explicitly indicated, only statistically significant results are reported (for a good primer on statistical significance, consult <http://www.measuringu.com/blog/statistically-significant.php>). To report the level of statistical significance, the following reference is used:

p-value	reported symbol
< 0.10 to 0.05	*
< 0.05 to 0.01	**
< 0.01	***

Similarly, the type of statistical test is also reported in superscript after the level of statistical significance. The following reference indicates the type of test referenced in the text:

1. Wilcoxon Test
2. Manny Whitney Test
3. Welch's t-test

Currency conversions

For comparability, prices and wages in national currency are converted into US Dollars using exchange rates to the US dollar at December 31, 2014 (<http://www.oanda.com/currency/historical-rates/>).



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