



# Guinea, Liberia and Sierra Leone

October 2015: As harvest season is underway, coping improves in the three countries.

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

WFP/Rein Skallerud

## Highlights

- In October, coping improved in Liberia and less broadly in Guinea and Sierra Leone.
- A few commodity price changes were detected this month, including a decrease in the price of local rice and an increase in palm oil. This corresponds with respondents' reports of food availability during the current harvest.

## 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](#).

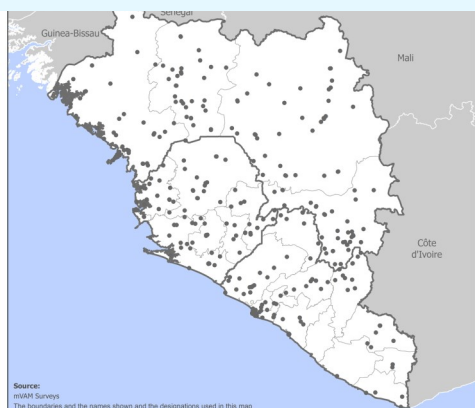
In September, average national rCSI levels did not improve in all three countries. In October, the rCSI improved an average of 1.3 points for repeat respondents (those who report in the current and previous survey round, n=775) in Liberia.\*\*\*<sup>1</sup> In Guinea and Sierra Leone, while the change in the average national rCSI was not statistically significant, some wealth groups saw improvements in their rCSI as well as the average duration of coping.

Figure 1: Average rCSI levels, October 2015



## Methodology

October 2015 marked the 13<sup>th</sup> round of remote data collection for the 3 countries. In Liberia, 1,150 surveys were completed on the 18<sup>th</sup>, 19<sup>th</sup> and the 27<sup>th</sup> (a delay due to mobile network issues); in Sierra Leone, 1,020 surveys were completed from the 19<sup>th</sup> to the 20<sup>th</sup> and in Guinea, 1,162 surveys were completed from the 17<sup>th</sup> to the 30<sup>th</sup> of October. 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: New cases limited to Guinea

In October, transmission of Ebola was geographically confined to a small area in Guinea. In October, six new cases of Ebola were reported in the Forecariah region of Guinea. Three cases were reported in the week ending 18 October and three cases were reported in the week ending 25 October. Several contacts from the original case went untraced, meaning the potential for new cases was high. At the end of the month, Sierra Leone remained Ebola free for six weeks, nearing an announcement that the country was Ebola free. Liberia remained Ebola free with no cases discovered. [WHO Ebola Situation Report, 28 October 2015](#)

## Coping levels by country

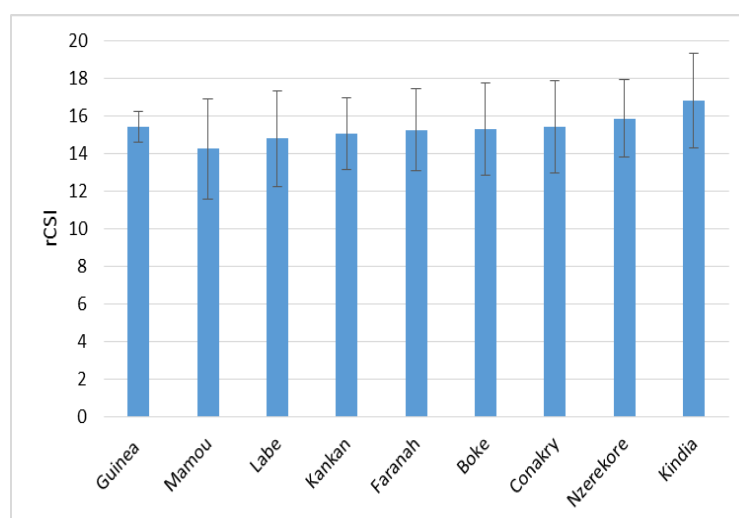
In Guinea, since polling with SMS commenced in June, we observed substantial improvements in the rCSI in July and August. In the past two months, improvements have not been conclusive and this month no changes in the rCSI at national or sub-national levels are statistically significant. There are, however, other indications that coping has improved. Examining the number of days repeat respondents (n=327) relied on coping strategies, we observe statistically significant reductions in the average number of days households resorted to borrowing (-0.6 days)\*, relied on less expensive food (-0.6 days)\*\*\*, and reduced their number of meals (-0.5 days)\*.<sup>1</sup> Examining rCSI scores by wealth group, (using the type of sanitation accessed as a proxy measure for wealth) there was a statistically significant average decrease of -3.4 points in the rCSI of the second wealthiest group, those with access to a shared flush toilet. Looking at rCSI by the sex of the head of household, neither group saw a statistically significant change compared to September. In October, the average rCSI was higher for female-headed households (16.1) than male-headed households (14.7).\*\*<sup>2</sup>

In Liberia, coping worsened very slightly in September, but in October among repeat-respondents, (n=775) the rCSI improved on average -1.3\*\*\* points per household, and in the South East region, the rCSI decreased among repeat respondents (n=92) an average of -2 points.\*\*<sup>1</sup> Looking at rCSI scores of repeat respondents by wealth group, the rCSI improved for the two wealthier groups. The rCSI improved on average -1.7\* points for those with access to a cement pit latrine (n=124) and improved -1.6 points for those with their own flush toilet (n=333).\*\*<sup>1</sup> 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 score decreased -1.2 for repeat respondents (n=588).\*\*\*<sup>1</sup>

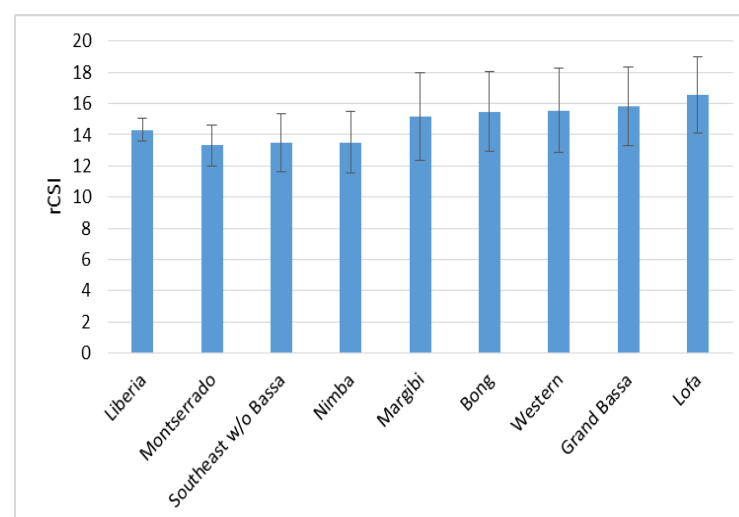
In October, the average amount of coping, measured by the rCSI, was higher for female-headed households (16) than male-headed households (14).\*\*<sup>2</sup>

In Sierra Leone, the rCSI, compared to Guinea and Liberia, has seen much less variation. In October, the change in rCSI among repeat respondents is not statistically significant at both national and sub-national levels. Looking at rCSI scores by wealth group, there was an average decrease of -1.7 points in repeat-respondents (n=205) who use a cement pit latrine.\*<sup>1</sup> Looking at rCSI by the sex of the head of household, neither group saw a statistically significant change compared to September. In October, the average rCSI for female-headed households (14.7) was slightly higher than the average for male-headed households (14).\*<sup>2</sup>

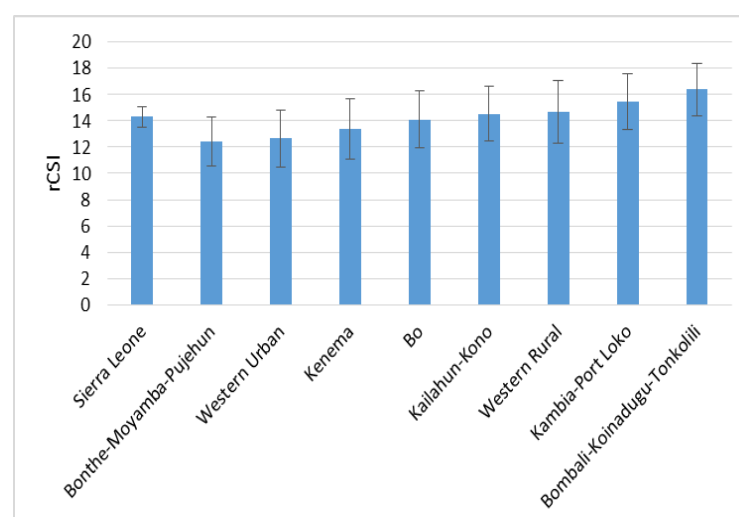
**Figure 2: Average rCSI: Guinea, October 2015**



**Figure 3: Average rCSI: Liberia, October 2015**



**Figure 4: Average rCSI: Sierra Leone, October 2015**



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



## Slight changes in prices corresponding with participants' reports of the rice harvest season

Looking at the seasonal calendar for [Guinea](#), [Liberia](#) and [Sierra Leone](#), in October, harvesting activities are normally under way and provide income through farm labour and increased food availability. In October, with the exception of a small rise (+1%)\*<sup>3</sup> in the price of palm oil in Sierra Leone, we observe no other statistically significant change in prices at national levels. Month to month changes can often be slight, so to examine the broader movement of prices, we compared October commodity prices against prices from the beginning of the year, January 2015 for Liberia and Sierra Leone and June 2015 for Guinea. In Liberia, the price of imported rice has decreased 3% since January 2015.\*\*<sup>2</sup> In Sierra Leone, the price of local rice has increased 3% as has the price of palm oil, 2%.\*\*<sup>2</sup> In Guinea, the price of local rice has increased by 3%\*\*\* as well as the price of palm oil, 5%, since June 2015.\*\*<sup>2</sup>

Some variations in commodity prices at sub-national levels were detected and correspond with respondents' reports that local rice harvests have increased availability yet prices have not improved for other commodities including palm oil and meats. In Sierra Leone, in the sample-domain of Bombali-Koinadugu-Tonkolili, the price of local rice decreased 5%\*\* as did the price of local rice in Nzerekore, Guinea (-5%).\*\*<sup>3</sup> In the Upper Region of Guinea (Labe-Mamou), the price of palm oil increased +10%.\*\*\*<sup>3</sup>

**Table 1: Prices in Guinea, Liberia and Sierra Leone, October**

Country	October Prices (in local units and currency)			
	Imported rice	Local rice	Palm oil	Manual Labour Daily Wage Rate
Guinea	4338 (GNF/kg)	5182 (GNF/kg)	4749 (GNF/half-litre)	23089 (GNF/day)
Liberia	26.8 (LRD/cup)	27.1 (LRD/cup)	26.5 (LRD/pint)	231 (LRD/day)
Sierra Leone	1041 (SLL/cup)	999 (SLL/cup)	1801 (SLL/pint)	10813 (SLL/day)

## Minimal change in wages and terms of trade

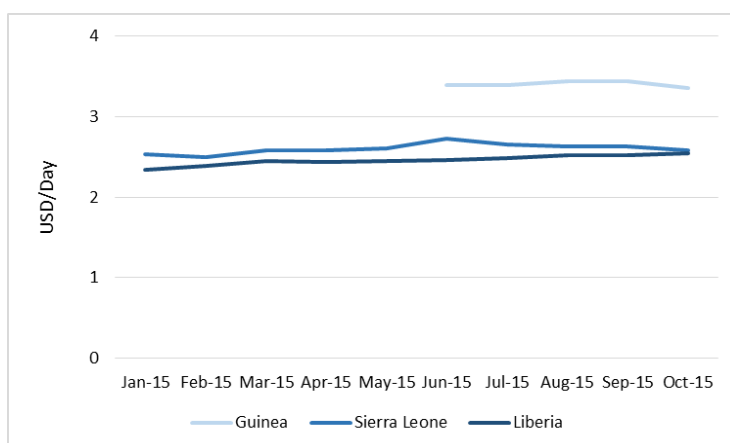
Labour wages are important measures of food security as they contribute to understanding economic activity and purchasing power. October data reveals no statistically significant changes in reported daily wages for manual labour at either national or regional levels in Guinea, Liberia or Sierra Leone. Comparing wage rates to beginning of the year for Liberia and Sierra Leone (June 2015 for Guinea) to October, wages have increased 9% in Liberia.\*\*<sup>2</sup> In Guinea and Sierra Leone, the changes in manual labour wages over this period are not statistically significant.

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. In October, no changes in terms of trade were observed at national levels. In Liberia, the ToT for wages to local rice increased from 8 to 9.5 units in Lofa and in the Southeast, ToT for wages to palmoil also increased from 9.0 to 10.2.\*\*<sup>3</sup> In Sierra Leone, ToT for wages to local rice decreased from 11 to 10.2\*\* units in Bonthe-Moyamba-Pujehun and ToT for wages to palm oil also fell from 6.6 to 5.6 in Bombali-Koinadugu-Tonkolili.\*\*\*<sup>3</sup> In the Middle Region (Labe-Mamou) of Guinea, ToT for wages to palm oil decreased slightly from 5.6 to 5.\*\*\*<sup>3</sup>

## Perceptions of food security in October

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 [Reputate](#) 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 — October 2015**



**Figure 6: Average sentiment scores, October 2015**



In October, the mean sentiment score in Guinea was very slightly positive in Guinea (0.006) while mean sentiment scores for Liberia (-0.002) and Sierra Leone (-0.03) were very slightly negative.

In Guinea, the change in mean sentiment score this month was not statistically significant at either national or regional levels. Out of the 945 responses in October, a few responses mentioned harvests, unemployment, rain/flooding and Ebola as factors of food security. This month, five respondents mentioned lack of employment opportunities as a cause of food insecurity. Three respondents cited rains and flooding when describing their food security, mentioning that the difficulties caused by flooding and raining were still being felt this month. In October, four respondents mentioned the harvest. Three responses were positive while one response specified that the returns of harvest this year were less than expected. Finally, three respondents cited the negative effect of Ebola on food security in their community.

In Liberia, the change in mean sentiment score this month was not statistically significant at either national or regional levels. Out of 1,150 responses, the single most cited factor relating to food security was the current harvest. A total of 38 responses mentioned harvesting, of which 34 stated harvesting activities currently underway positively influenced their food security. Four respondents indicated that gains from harvest were less than expected and/or damaged due to rain. In both Sierra Leone and Liberia, several respondents mentioned that while rice was available that prices for other commodities such as palm oil and meat still remained high. This month, a greater proportion of respondents mentioned unemployment compared to last month (33 vs 18). In October, as in last month, many participants (28) mentioned difficulties due to transportation and roads, citing that transportation difficulties negatively influenced the cost, availability and amount of time spent procuring food. Finally, four respondents mentioned Ebola this month. The two positive responses stated that food security levels were equal or near to pre-outbreak levels, while two negative responses mentioned that Ebola still had a detrimental effect on their community's food security.

In Sierra Leone, among repeat respondents (n=390), the mean sentiment grew slightly more positive, with an average improvement of +0.08 points per respondent.\*\*\*<sup>1</sup> Out of 1,020 responses, positive improvements due to the harvest stand out as the single most cited factor related to food security. A total of 40 respondents mentioned harvest activities, of which 36 were positive while four respondents mentioned delayed and/or damaged yields. A total of 12 participants mentioned difficulties due to transportation and roads. Finally, 28 respondents mentioned Ebola in October. A large majority of responses (22), mentioned that detrimental effects of Ebola on food security are still being experienced while six respondents mentioned that that food security levels were equal to or approaching pre-outbreak levels.

Figure 7: Word cloud for Guinea, October 2015

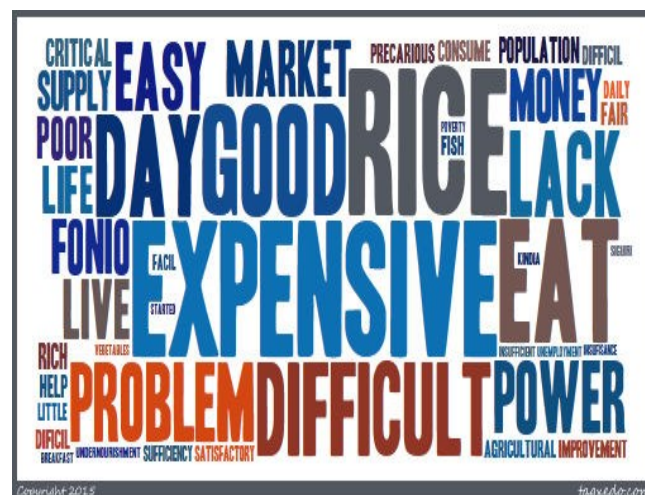


Figure 8: Word cloud for Liberia, October 2015



Figure 9: Word cloud for Sierra Leone, October 2015



## Conclusions and Outlook

In October, average national coping measured by the rCSI improved in Liberia. In Sierra Leone and Guinea, overall rCSI improvements were not statistically conclusive yet improvements in certain coping strategies and in some wealth groups indicate that food security has improved, coinciding with the harvest season. This month, national prices show little change at the national level despite greater availability of locally harvested rice. As harvest activities should increase and diversify in next month and Ebola continues to wane, we should expect to see improvements in coping, food availability and economic activity in the upcoming months.

### References

1. The Coping Strategies Index:  
[http://documents.wfp.org/stellent/groups/public/documents/manual\\_guide\\_proced/wfp211058.pdf](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](http://vam.wfp.org/sites/mvam_monitoring/Read_Me.pdf)
3. 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/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/Liberia%20Apr_0.png)  
[http://www.fews.net/sites/default/files/styles/large/public/Sierra%20Leone%20Apr\\_0.png](http://www.fews.net/sites/default/files/styles/large/public/Sierra%20Leone%20Apr_0.png)
4. 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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