Malawi Floods

Report on aftermath of 2015 floods

2020

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Context

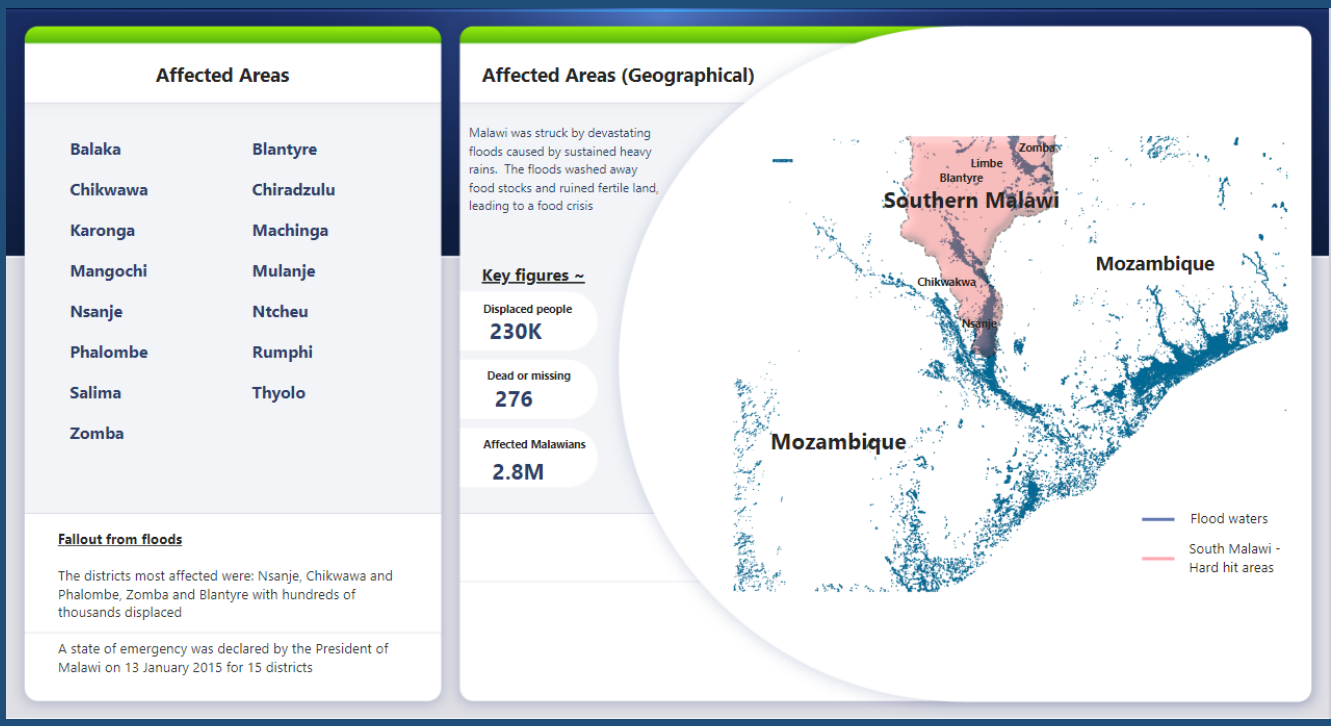
In recent decades, countries across Africa have experienced an increase in the frequency and severity of floods. Malawians are particularly affected by climate change because of their significant reliance on subsistence farming.

From January to March 2015, Malawi was struck by devastating floods caused by sustained heavy rains. Approximately 230,000 people were displaced and 276 reported dead or missing. The floods washed away food stocks and ruined fertile land, leading to a food crisis that affected approximately 2.8 million Malawians. The Southern Region of Malawi received 400% more rainfall than the Long Term Mean for the region. 15 of the country's 28 districts experienced significant flooding, with a state of emergency declared on 13 January 2015.

The extreme rainfall event and resulting flooding led to displacement, with many affected households evacuated to collective centres (schools, churches and mosques). As these naturally (and in some cases enforcedly) disbanded after the first two months, affected households with no long-term shelter solution constructed simple emergency shelters, or stayed with host families. Properties sustained damage through a combination of rain and high winds. The most affected communities were more vulnerable to the disaster, as a result of their shelter and settlement typologies [UNICEF].

This report offers insights into the aftermath of the 2015 floods, with special focus on food prices, health sites as well as an overall view of the extent of the flood on Southern districts. The analysis was conducted using data mainly provided by the Humanitarian Data Exchange. Each visualization presented in this report was developed with Microsoft Power BI.

Floods Extent



Key Figures (approximate)

230K

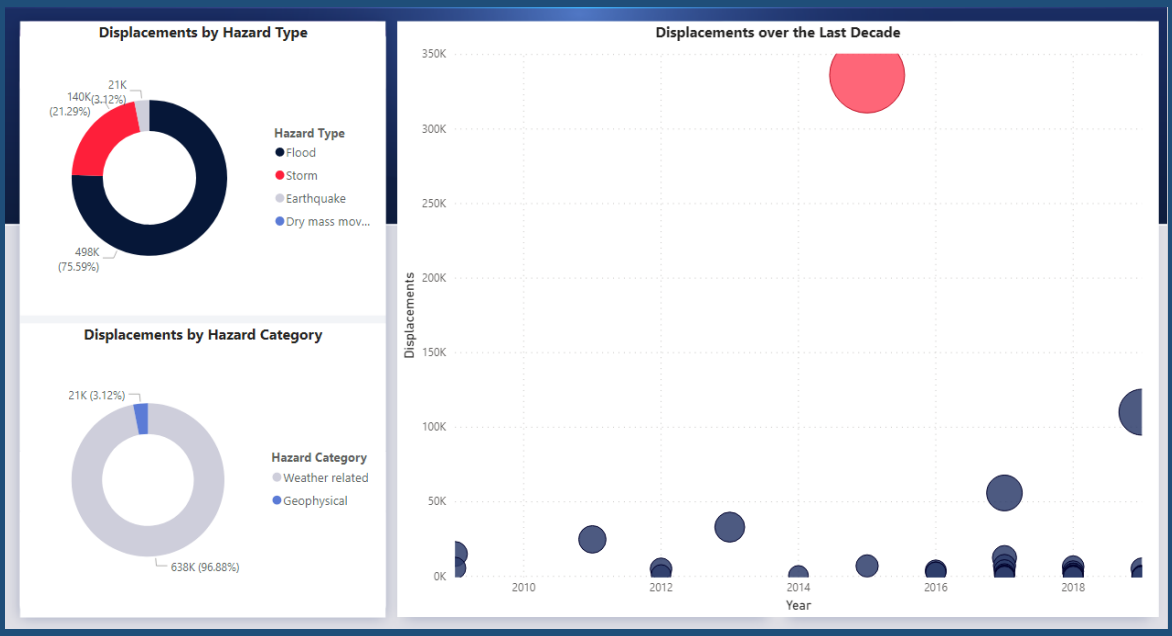
276

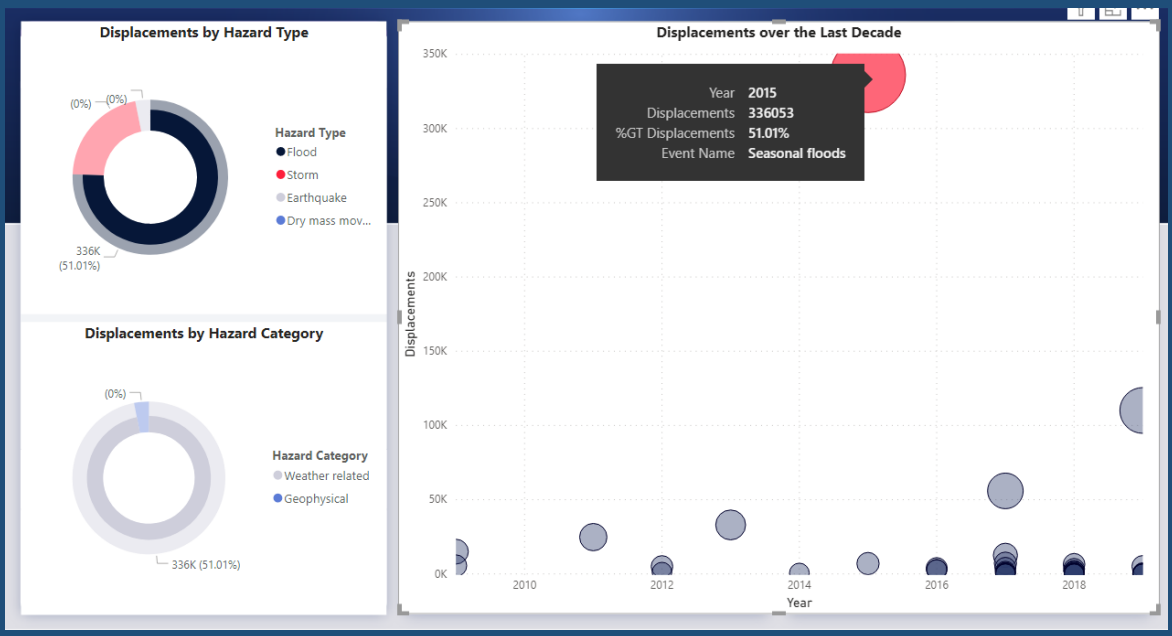
2.8M

15 districts in Southern Malawi were affected by the floods with the hardest hit areas being **Zomba**, **Chikwakwa**, **Phalombe**, **Blantyre** and **Nsanje**.

As seen in the geographical view of the impact, these areas were plunged under water with thousands losing access to their homes and business centers. Mozambique was not spared as well, with certain parts of the country suffering a similar ordeal to Southern Malawi.

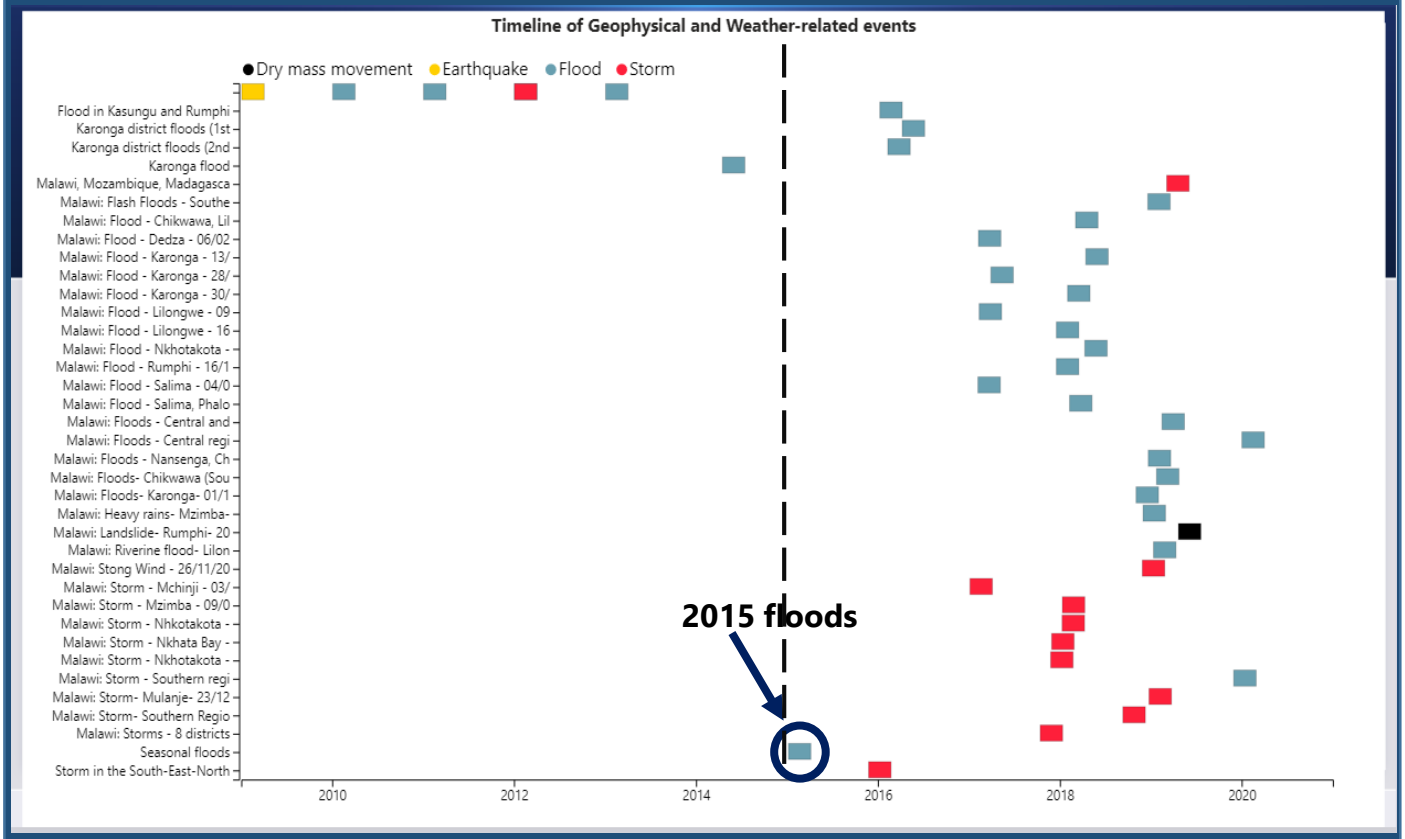
Floods Extent - Displacement





Presented on this sheet is a view of total displacements by various weather and geophysical related events in the last decade. Each bubble represents a major event and bubble sizes represent the volumes of people displaced. It is no surprise that 2015 is the major outlier in the last decade, with **51%** of displacements attributed to the floods of early 2015 as well as other floods that happened throughout the year. It is quite telling that more than half of the displacements from weather and geophysical tragedies in the last decade in Malawi occured in 2015. This is a harrowing insight into just how devastating the floods of 2015 were for the country, particularly in the Southern Region.

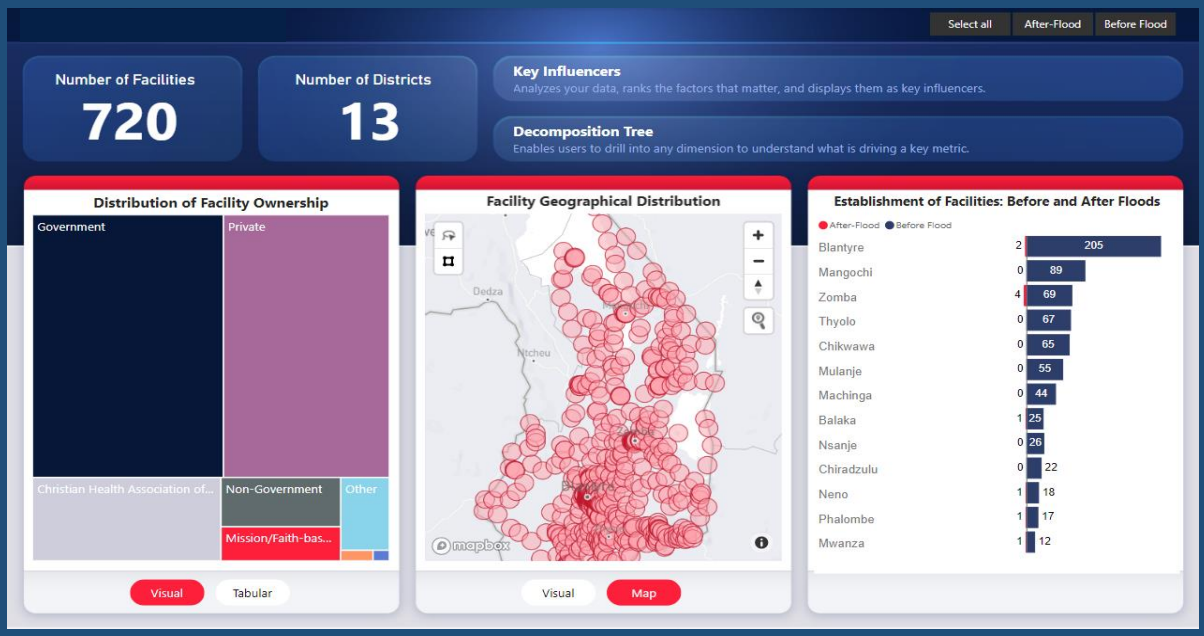
Floods Extent - Displacement

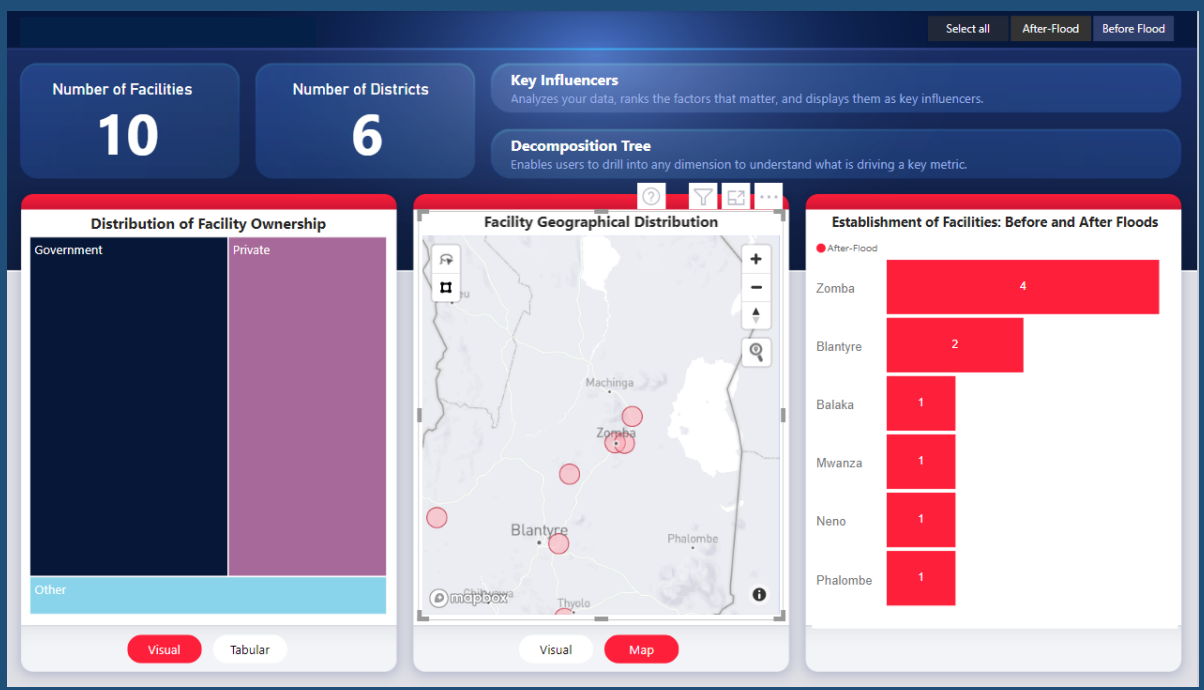


This sheet presents a view of the timeline of displacements from unfortunate geophysical and weather-related events in Malawi in the last decade. 2015 might have been a warning sign of things to come, as it can be seen that since the unfortunate events of that year, there have been many more incidences of Malawians displaced due to floods, with **six(6) times** more displacement incidences occurring after 2015 than before it

Could this be attributed to **change in climate** or could this also be a case of **authorities not taking action** after the catastrophic events of 2015? Given the stark difference between pre-2015 and post-2015, it is clear that the authorities might need to put measures in place to ensure that Malawians do not live in fear of displacement when the rains arrive. .

Health Sites

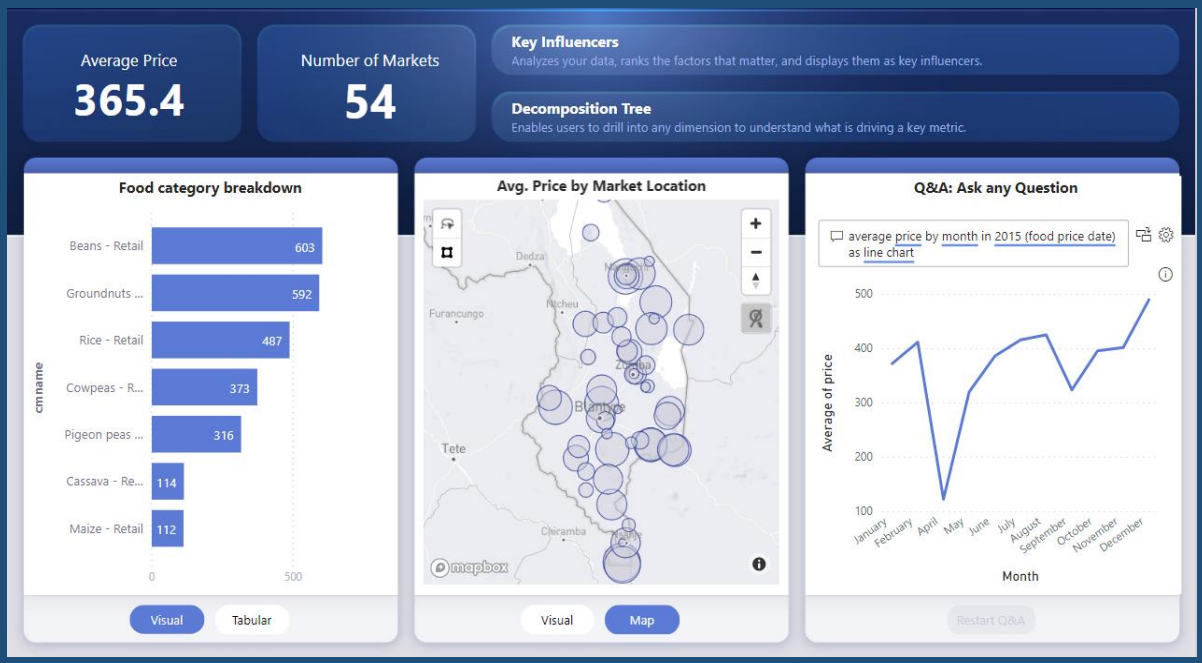


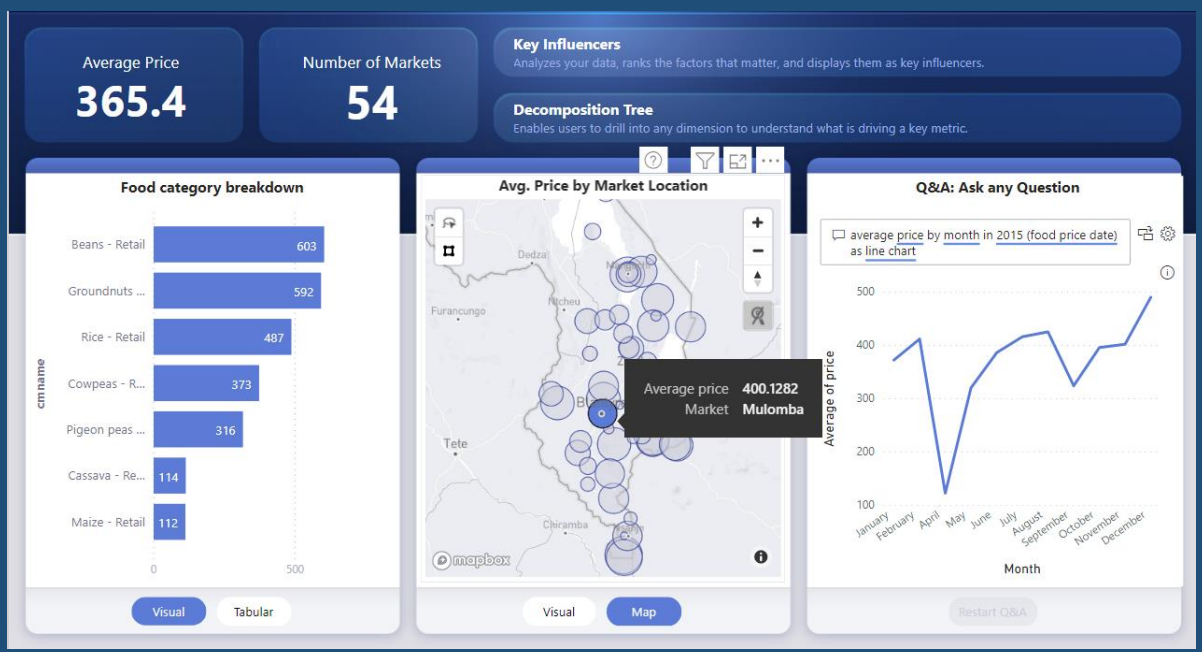


There are **720** health facilities littered across the Southern Region of Malawi with a large percentage funded by the government and private bodies. Figure 1 presents a total view and break down of facilities by the districts in which they reside. Blantyre district is above the rest with many facilities.

Figure 2 presents information on health facilities established after the flood. **10** facilities have been established in Southern Malawi post the floods. Interestingly, **70%** of these new facilities are found in areas that were heavily affected by the floods in 2015 (**Zomba**, **Phalombe** and **Blantyre**).

Food Prices





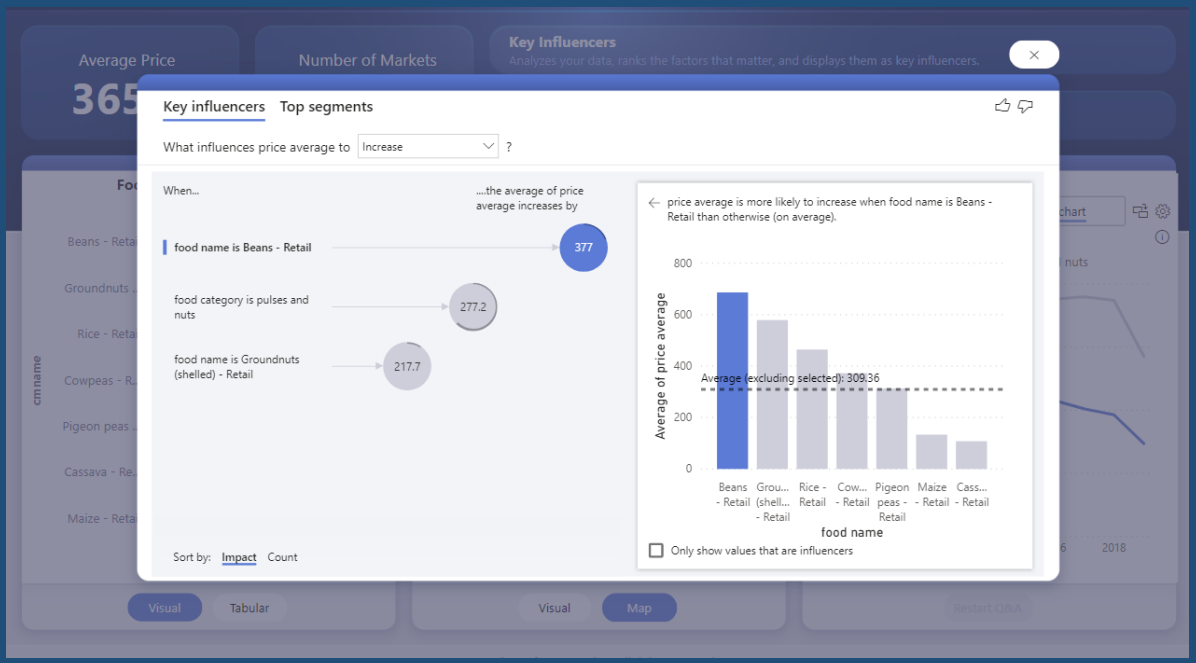
The average prices of food across multiple markets in Southern Malawi in 2015 is presented above. This data covers prices across **54** markets with an average yearly price of **365.4** Malawian Kwacha. There was a brief increase in avg. food price from January 2015 to March and a massive dip in April. Average prices returned to normalcy with a steady rise overall (albeit a few intermittent dips) till the end of the year. Markets in heavily hit areas such as **Nsanje** and **Blantyre** featured amongst the highest priced on average in 2015 with beans, groundnuts and rice being the highest priced food items on the market.

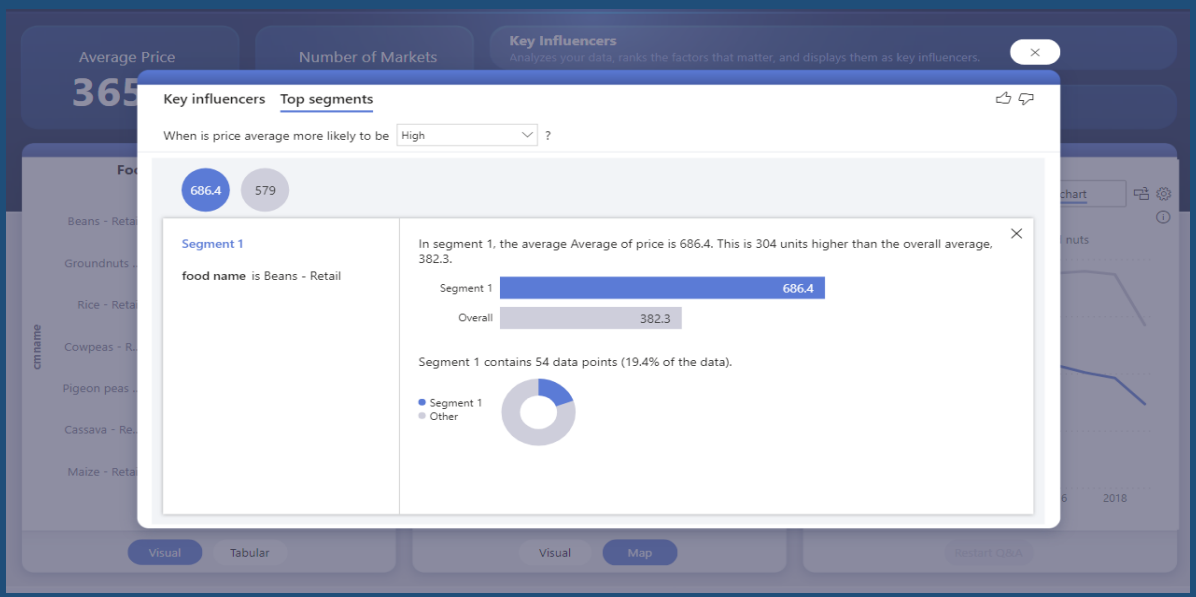
Food Prices

Still focusing on food prices, the view is switched to a pivoted breakdown of food price by type as well as a ranking of markets by average price. The ranking of markets with the bar chart presents an alternative (and well ordered) view to the geographical view.

The average price of food types year-on-year is compared in Figure 2. One interesting thing to note is the **spike in price of food between 2015 and 2016**. A food crisis -said to be the worst in a decade in Malawi- was reported after the floods in early 2015. This could be one reason such a huge spike is seen in this period.

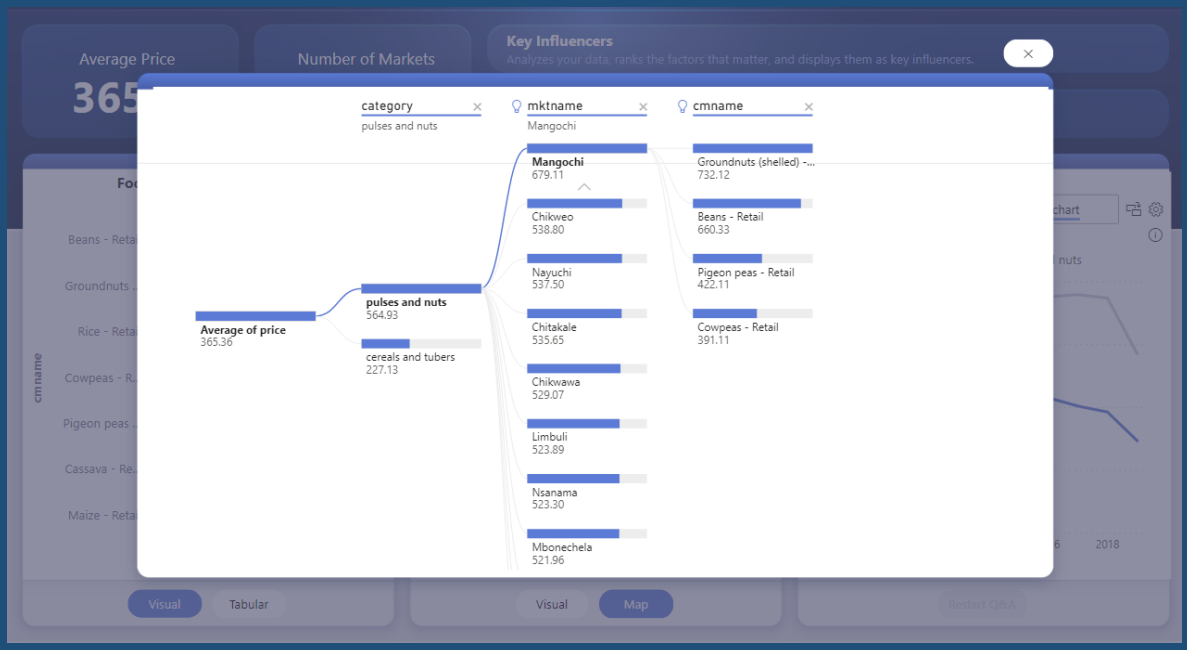
Food Prices

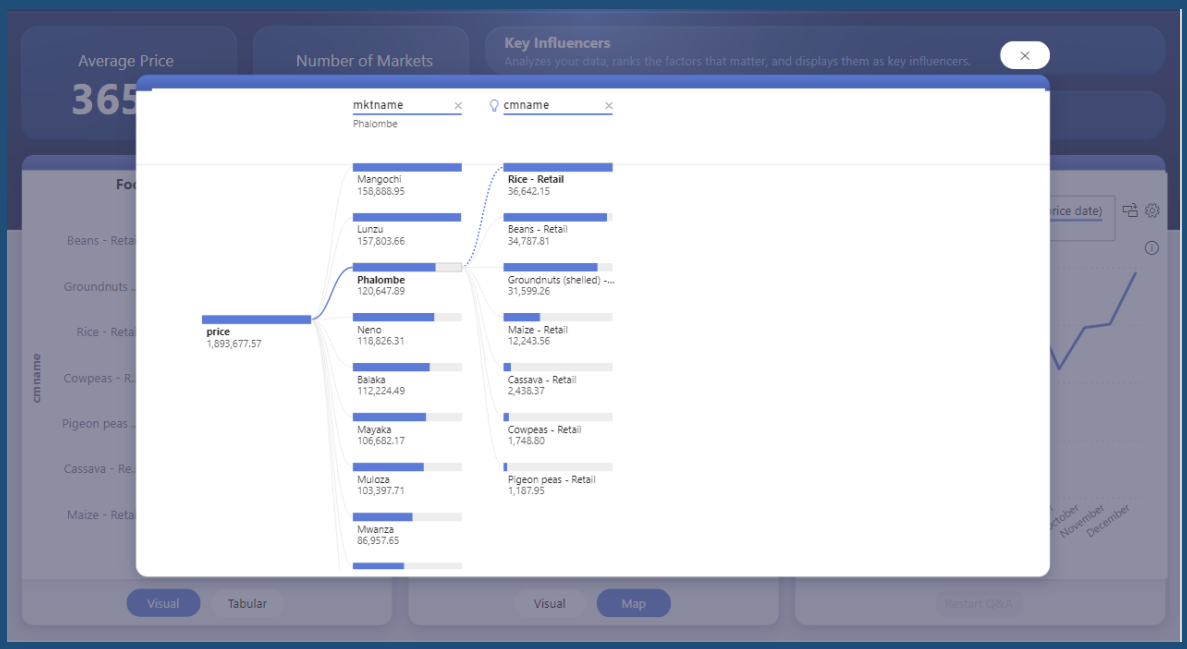




There is still an opportunity to dig deeper into food prices. Using the average as the marker as before, an inquest is conducted into the main influencers for increase in average price of food across markets in Malawi. This section presents a view which indicates that there is an increase in the average price by **377** MWK when the food in question is **beans**. This is to say that purchasing beans between 2015 and 2016 especially in a market located in a heavily hit area such as **Nsanje** or **Blantyre** would have cost the average consumer a significantly higher fee.

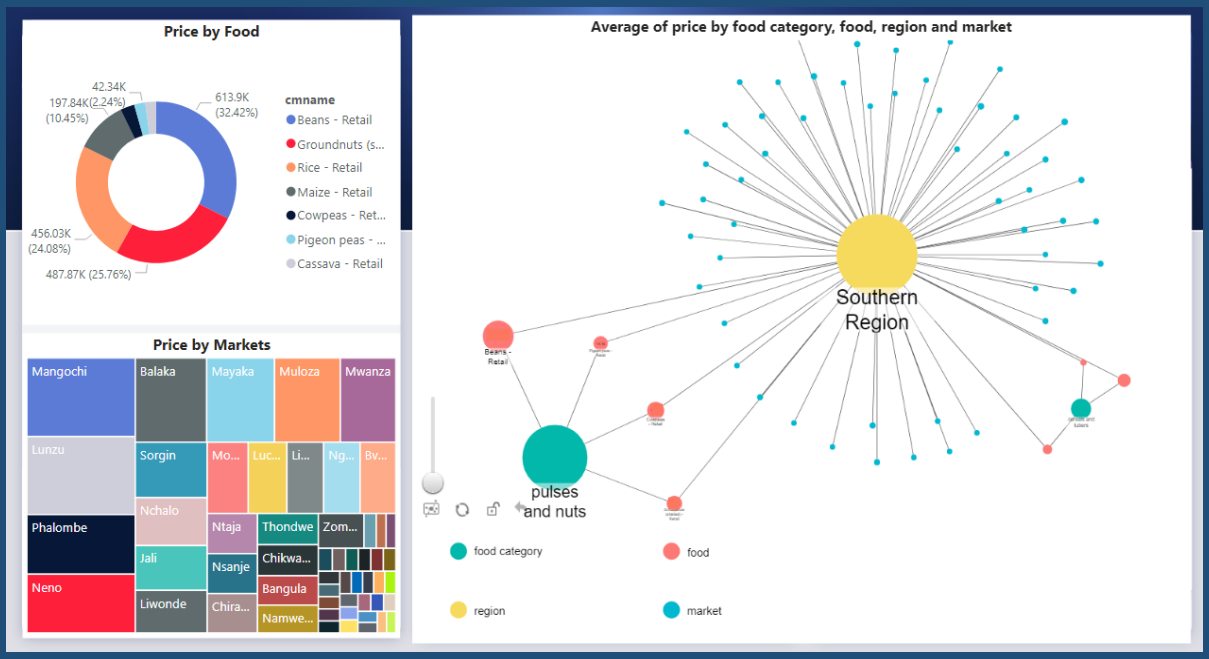
Food Prices

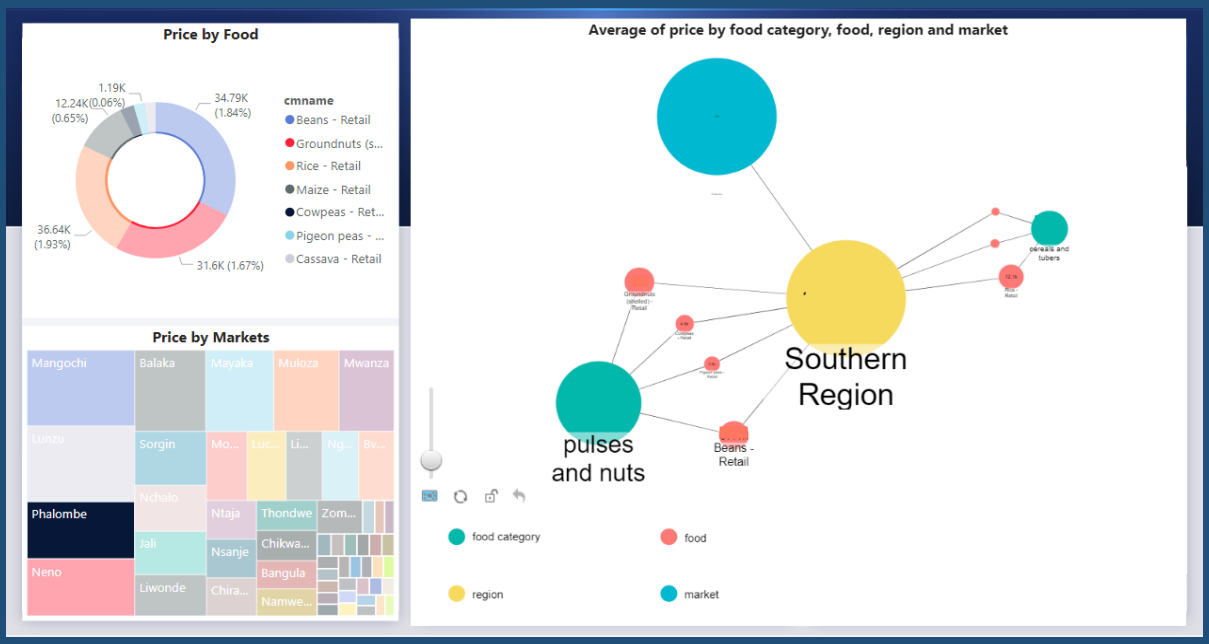




This section makes use of a decomposition tree to drill down into three main dimensions: category of food, market name and food name, using average price and total price of food in 2015 as the various points of focus. A breakdown of markets and what they contribute to the average and sum of food prices with respect to the various food items can be seen. **Phalombe**, which was a heavily hit area is focused on in Figure 2. It is seen here that the price of Rice, Beans and Groundnuts contributed heavily to the total 2015 price for the market in this district. A deeper dive into other markets can be explored as the user scrolls down the interactive chart.

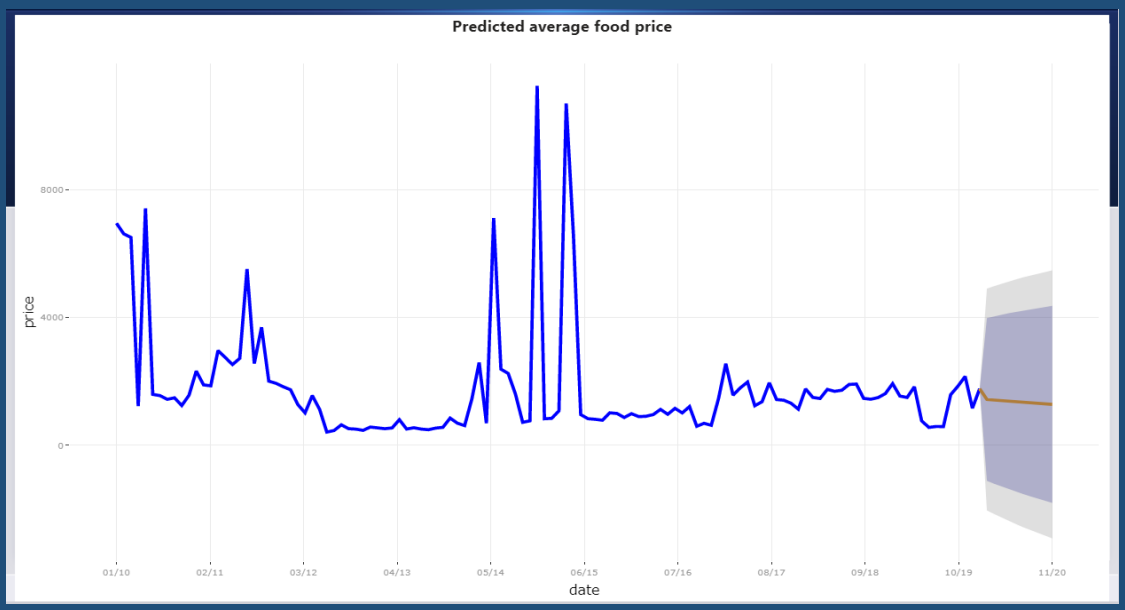
Food Prices

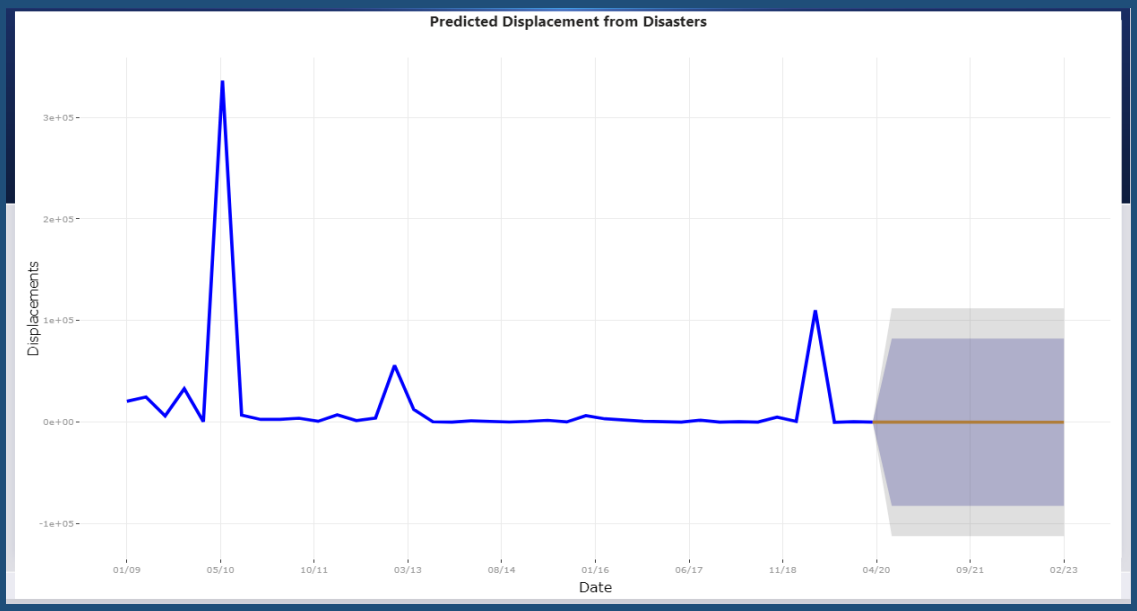




An additional view of the drivers of food price in the Southern Region can be seen in the network graphs presented on this sheet. The size of bubbles indicates the influence of the various indicators on the overall picture. As mentioned earlier, **pulses and nuts** have a great influence on food prices in 2015 and in other years as well. Beans and groundnuts proved to be the heavy hitters in this category, with a view given for Phalombe market, which is located in a badly affected district .

Future Outlook





Beyond what has occurred since the floods of 2015, this section presents an outlook into the future for market prices and displacements in the coming years. Using a basic ARIMA model, average market prices are predicted to hit approximately **1434.68 MWK** in mid-2020, after which a steady fall to **1283.22 MWK** will be seen towards the end of the year. In the case of displacements, the model does predict any significant displacement from disasters in the few years to come, although this might be wide off the mark. The times series model and visual can be of great help to government and policy planners in their preparations for seasonal rainfalls and changing weather patterns.

Key highlights

The key highlights from this report have been summarized below:

- 15 districts in Southern Malawi were affected by the floods with the hardest hit areas being Zomba, Chikwakwa, Phalombe, Blantyre and Nsanje.
- Approximately 230,000 people were displaced and 276 reported dead or missing. The floods led to a food crisis that affected approximately 2.8 million Malawians.
- 51% of displacements caused by geophysical and weather related-events in Malawi in the last decade occurred in 2015.
- There have been six (6) times more occurrences of displacements floods after the 2015 floods than there were before it.
- Markets in heavily hit areas such as Nsanje and Blantyre featured amongst the highest priced on average in 2015 with beans, groundnuts and rice being the highest priced food items on the market.
- There was a huge spike in price for food commodities between 2015 and 2016 with a food crisis said to be "the worst in a decade in Malawi" reported in this period
- Purchasing beans between 2015 and 2016 especially in a market located in a heavily hit area such as Nsanje or Blantyre cost the average consumer a significantly higher fee.
- 10 health facilities have been established in Southern Malawi since the floods.
- 70% of these new facilities are found in areas that were heavily affected by the floods in 2015 (Zomba, Phalombe and Blantyre).
- Average market prices are predicted to hit approximately 1434.68 MWK in mid-2020, after which a steady fall to 1283.22 MWK will be seen towards the end of the year.

References

Malawi 2015 Flood Extent - https://data.humdata.org/m/dataset/malawi-floods-2015-flood-extent

Malawi Food Prices - https://data.humdata.org/m/dataset/wfp-food-prices-for-malawi

Malawi Health Sites - https://data.humdata.org/m/dataset/malawi-healthsites

Malawi - Internally displaced persons – IDPs - https://data.humdata.org/dataset/idmc-idp-data-for-malawi

MHFR - Master Health Facility Registry - http://zipatala.health.gov.mw/facilities

Microsoft Power BI - https://powerbi.microsoft.com/en-us/

The Hunger Project. https://www.thp.org/news/flooding-and-drought-causes-food-crisis-in-malawi/