Rwanda Food Price Analysis

Project Scope

The project includes analyzing potato price and creating a function to calculate any other foods in the future. The Project document starts with the Scope of the project, followed by objective of the project, the code used (R programming), the Visualizations and the Insights.

Objective

This is a practice project to analyze price of Potato overtime at Rwanda, a country in East Africa.

Code:

```r
# Load the readr and dplyr packages
library(readr)
library(dplyr)

# Import the potatoes dataset
potato_prices <- read_csv("datasets/Potatoes (Irish).csv")

# Take a glimpse at the contents
glimpse(potato_prices)


# Import again, only reading specific columns
potato_prices <- read_csv("datasets/Potatoes (Irish).csv",
col_types = cols_only(adm1_name = col_character(),
                      mkt_name = col_character(),
                      cm_name =  col_character(),
                      mp_month = col_integer(),
                      mp_year = col_integer(),
                      mp_price = col_double()))


# Rename the columns to be more informative
potato_prices_renamed <- potato_prices %>% rename(
region = adm1_name,
market = mkt_name,
commodity_kg = cm_name,
```

```r
    month = mp_month,
    year = mp_year,
    price_rwf = mp_price
)

# Check the result
glimpse(potato_prices_renamed)
```

OUTPUT:

```
Rows: 4,320
Columns: 6
$ region       <chr> "$West/Iburengerazuba", "$West/Iburengerazuba", "$West…
$ market       <chr> "Birambo", "Birambo", "Birambo", "Birambo", "Birambo",…
$ commodity_kg <chr> "Potatoes (Irish)", "Potatoes (Irish)", "Potatoes (Iri…
$ month        <int> 11, 12, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 1, 2, 3…
$ year         <int> 2010, 2010, 2011, 2011, 2011, 2011, 2011, 2011, 2011, …
$ price_rwf    <dbl> 157.0000, 133.3333, 96.5000, 97.0000, 107.8000, 125.50…
```

```r
# Load lubridate to perform Timeseries Analysis
library(lubridate)

# Convert year and month to Date
potato_prices_cleaned <- potato_prices_renamed %>% mutate(date =
ymd(paste(year, month, "01" ))) %>% select(-year, -month)

#Result
potato_prices_cleaned

read_price_data <- function(commodity) {
  data_file <- paste0("datasets/", commodity, ".csv")
  prices <- read_csv(
    data_file,
  col_types = cols_only(
    adm1_name = col_character(),
    mkt_name = col_character(),
    cm_name = col_character(),
    mp_month = col_integer(),
    mp_year = col_integer(),
    mp_price = col_double()
  )
)

prices_renamed <- prices %>%
```

```r
  rename(
    region = adm1_name,
    market = mkt_name,
    commodity_kg = cm_name,
    month = mp_month,
    year = mp_year,
    price_rwf = mp_price
  )

prices_renamed %>%
  mutate(
    date = ymd(paste(year, month, "01"))
  ) %>%
  select(-month, -year)
}

# Testing with the sample Food "Peas"

pea_prices <- read_price_data("Peas (fresh)")
glimpse(pea_prices)
```

```
...   Rows: 1,893
      Columns: 5
      $ region       <chr> "$West/Iburengerazuba", "$West/Iburengerazuba", "$West ...
      $ market       <chr> "Birambo", "Birambo", "Birambo", "Birambo", "Birambo", ...
      $ commodity_kg <chr> "Peas (fresh)", "Peas (fresh)", "Peas (fresh)", "Peas  ...
      $ price_rwf    <dbl> 403.5000, 380.0000, 277.5000, 450.0000, 450.0000, 375....
      $ date         <date> 2011-01-01, 2011-02-01, 2011-04-01, 2011-05-01, 2011- ...
```

```r
# Load ggplot2 to plot Data

library(ggplot2)

# Draw a line plot of price vs. date grouped by market
ggplot(potato_prices_cleaned, aes(x = date, y = price_rwf, group =
market)) + geom_line(alpha = 0.2) + ggtitle("Potato price over time")


# Load forecast and plot Potato forecasted Price
library(forecast)
potato_price_forecast <- forecast(potato_time_series)
potato_price_forecast
autoplot(potato_price_forecast) + ggtitle("Potato price forecast")
```
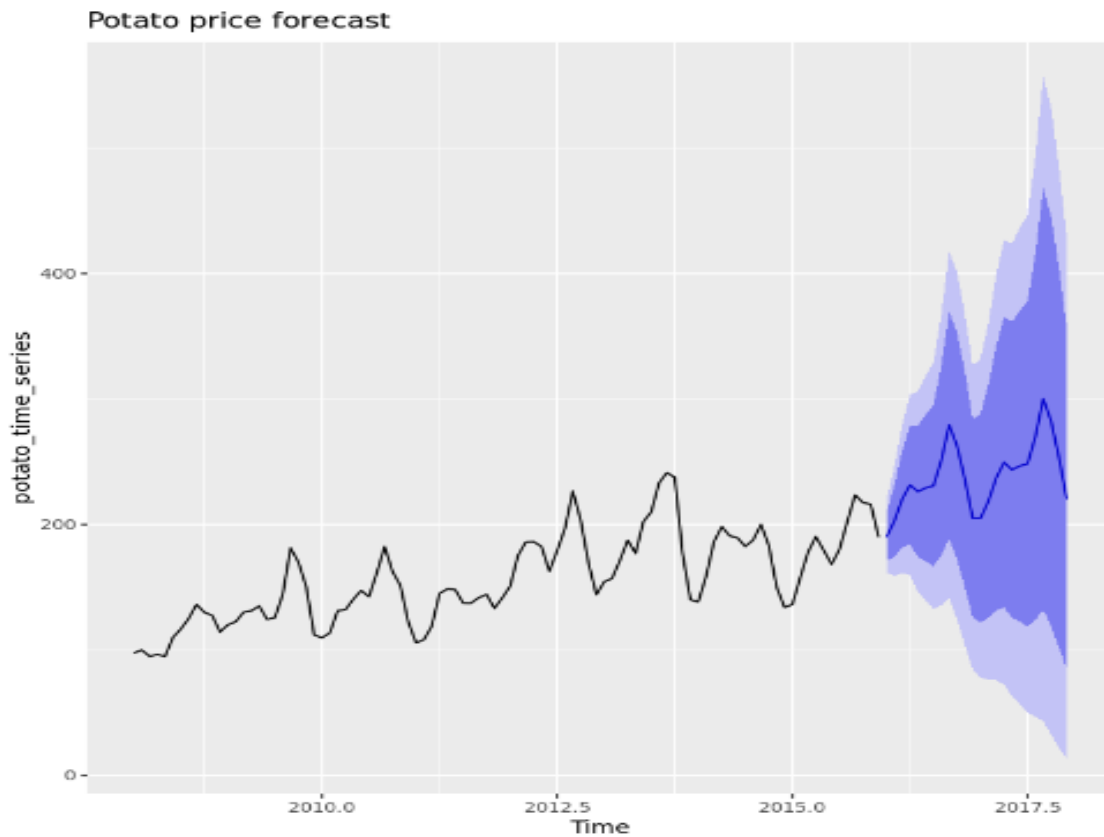
Visualizations:

Potato price over time

Pea price over time
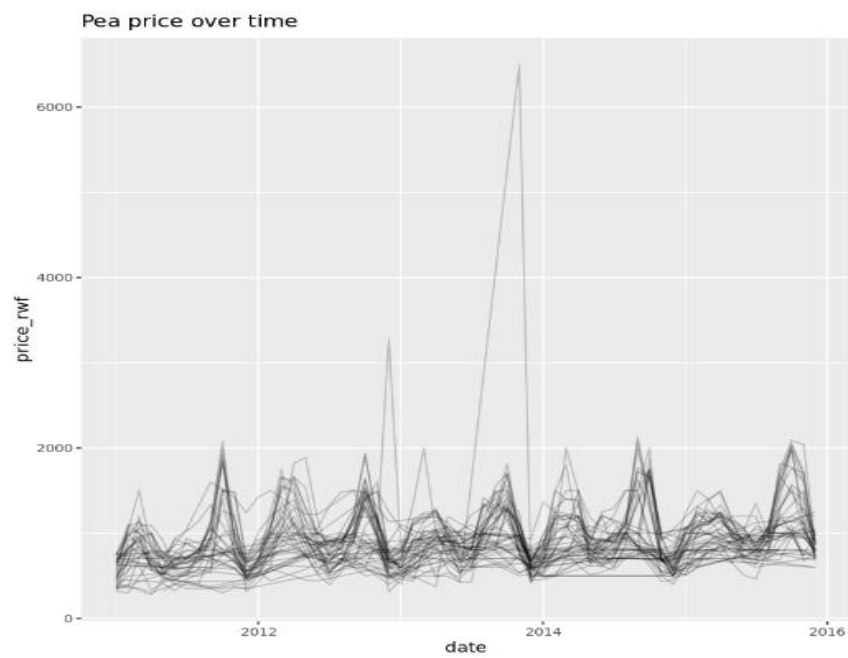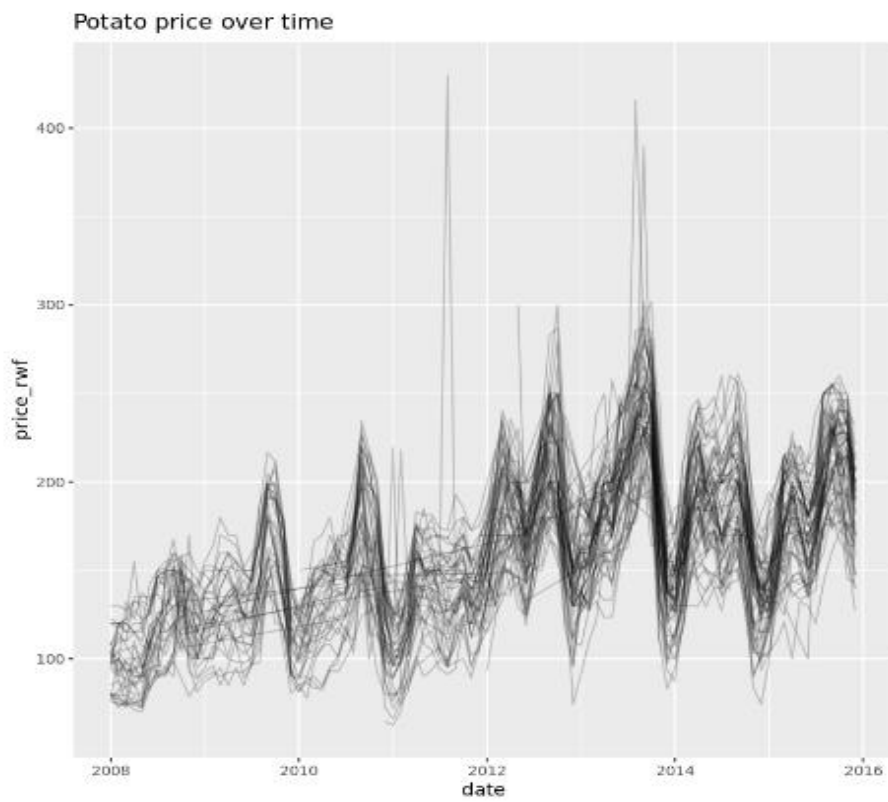
	Point Forecast	Lo 80	Hi 80	Lo 95	Hi 95
Jan 2016	190.0093	171.35706	208.6615	161.48317	218.5354
Feb 2016	202.6099	174.14582	231.0740	159.07783	246.1420
Mar 2016	220.0317	181.72222	258.3413	161.44238	278.6211
Apr 2016	231.5932	184.48380	278.7026	159.54559	303.6408
May 2016	226.2626	174.20438	278.3209	146.64641	305.8789
Jun 2016	229.1587	170.73454	287.5829	139.80665	318.5108
Jul 2016	230.8787	166.57270	295.1848	132.53113	329.2263
Aug 2016	251.1739	175.53815	326.8096	135.49902	366.8487
Sep 2016	279.3573	189.13187	369.5827	141.36943	417.3451
Oct 2016	262.7887	172.33073	353.2467	124.44516	401.1323
Nov 2016	236.0485	149.89274	322.2042	104.28465	367.8123
Dec 2016	205.0924	126.05584	284.1290	84.21640	325.9684
Jan 2017	205.0036	121.88813	288.1190	77.88948	332.1177
Feb 2017	218.4941	125.58323	311.4050	76.39917	360.5891
Mar 2017	237.1698	131.67270	342.6669	75.82591	398.5137
Apr 2017	249.5154	133.68437	365.3465	72.36711	426.6638

Potato price forecast

Insights:

- From the above Visualizations, it is evident that potato prices are an increasing trend since 2008 and until 2012. However, Post 2012, the prices are normalized and moves parallelly.

- Based on our Forecast, we see that price might slightly surge no 2016 and 2017.

- The peas chart we created the function developed from Potato analysis points that the peas price fluctuates up and down, however moving on a parallel channel when looked over years.