World Market Food Prices

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```
library(tidyquant, quietly = T)
```

```
## Warning: package 'tidyquant' was built under R version 3.4.2
```

```
## Warning: package 'lubridate' was built under R version 3.4.3
```

```
##
## Attaching package: 'lubridate'
```

```
## The following object is masked from 'package:base':
##
##     date
```

```
## Warning: package 'PerformanceAnalytics' was built under R version 3.4.3
```

```
## Warning: package 'xts' was built under R version 3.4.3
```

```
## Warning: package 'zoo' was built under R version 3.4.3
```

```
##
## Attaching package: 'zoo'
```

```
## The following objects are masked from 'package:base':
##
##     as.Date, as.Date.numeric
```

```
##
## Attaching package: 'PerformanceAnalytics'
```

```
## The following object is masked from 'package:graphics':
##
##     legend
```

```
## Warning: package 'quantmod' was built under R version 3.4.3
```

```
## Warning: package 'TTR' was built under R version 3.4.3
```

```
## Version 0.4-0 included new data defaults. See ?getSymbols.
```

```
## Warning: package 'tidyverse' was built under R version 3.4.3
```

```
## -- Attaching packages ---------------------------------------------------------------------
------------------------ tidyverse 1.2.1 --
```

```
## v ggplot2 2.2.1     v purrr   0.2.4
## v tibble  1.4.1     v dplyr   0.7.4
## v tidyr   0.7.2     v stringr 1.2.0
## v readr   1.1.1     v forcats 0.2.0
```

```
## Warning: package 'ggplot2' was built under R version 3.4.2
```

```
## Warning: package 'tibble' was built under R version 3.4.3
```

```
## Warning: package 'tidyr' was built under R version 3.4.3
```

```
## Warning: package 'readr' was built under R version 3.4.3
```

```
## Warning: package 'purrr' was built under R version 3.4.3
```

```
## Warning: package 'dplyr' was built under R version 3.4.2
```

```
## Warning: package 'stringr' was built under R version 3.4.2
```

```
## Warning: package 'forcats' was built under R version 3.4.3
```

```
## -- Conflicts ------------------------------------------------------------------------------
------------------- tidyverse_conflicts() --
## x lubridate::as.difftime() masks base::as.difftime()
## x lubridate::date()        masks base::date()
## x dplyr::filter()          masks stats::filter()
## x dplyr::first()           masks xts::first()
## x lubridate::intersect()   masks base::intersect()
## x dplyr::lag()             masks stats::lag()
## x dplyr::last()            masks xts::last()
## x lubridate::setdiff()     masks base::setdiff()
## x lubridate::union()       masks base::union()
```

```
##
## Attaching package: 'tidyquant'
```

```
## The following object is masked from 'package:dplyr':
##
##     as_tibble
```

```
## The following object is masked from 'package:tibble':
##
##     as_tibble
```

```
# Importing file
df <- read_csv("D:/Personal Projects/World Food Market prices/wfp_market_food_prices.csv")
```

```
## Parsed with column specification:
## cols(
##   adm0_id = col_integer(),
##   adm0_name = col_character(),
##   adm1_id = col_integer(),
##   adm1_name = col_character(),
##   mkt_id = col_integer(),
##   mkt_name = col_character(),
##   cm_id = col_integer(),
##   cm_name = col_character(),
##   cur_id = col_integer(),
##   cur_name = col_character(),
##   pt_id = col_integer(),
##   pt_name = col_character(),
##   um_id = col_integer(),
##   um_name = col_character(),
##   mp_month = col_integer(),
##   mp_year = col_integer(),
##   mp_price = col_double(),
##   mp_commoditysource = col_character()
## )
```

```
#Seeing through the first 5 observations
df %>% head(5)
```

```
## # A tibble: 5 x 18
##   adm0_~ adm0~ adm1~ adm1~ mkt_~ mkt_~ cm_id cm_n~ cur_~ cur_~ pt_id pt_n~
##    <int> <chr> <int> <chr> <int> <chr> <int> <chr> <int> <chr> <int> <chr>
## 1      1 Afgh~   272 Bada~   266 Fayz~    55 Bread    87 AFN      15 Reta~
## 2      1 Afgh~   272 Bada~   266 Fayz~    55 Bread    87 AFN      15 Reta~
## 3      1 Afgh~   272 Bada~   266 Fayz~    55 Bread    87 AFN      15 Reta~
## 4      1 Afgh~   272 Bada~   266 Fayz~    55 Bread    87 AFN      15 Reta~
## 5      1 Afgh~   272 Bada~   266 Fayz~    55 Bread    87 AFN      15 Reta~
## # ... with 6 more variables: um_id <int>, um_name <chr>, mp_month <int>,
## #   mp_year <int>, mp_price <dbl>, mp_commoditysource <chr>
```

```
#Finding how many different countries are there
df['adm0_name'] %>% unique() %>% count()
```

```
## # A tibble: 1 x 1
##       n
##   <int>
## 1    74
```

```
#Selecting relevant fields for EDA on Zambia Food Prices
Zambia_Food_Prices <- df %>% filter(adm0_name == 'Zambia') %>% select(country = adm0_name, marke
t = mkt_name, food_type = cm_name,  month = mp_month, year = mp_year, price = mp_price)
```

```
## Warning: package 'bindrcpp' was built under R version 3.4.2
```

```
Zambia_Food_Prices %>% head(5)
```

```
## # A tibble: 5 x 6
##   country market   food_type month  year price
##   <chr>   <chr>    <chr>     <int> <int> <dbl>
## 1 Zambia  Chingola Sorghum       8  2012  1.40
## 2 Zambia  Chingola Sorghum       9  2012  1.40
## 3 Zambia  Chingola Sorghum      10  2012  1.50
## 4 Zambia  Chingola Sorghum      11  2012  1.50
## 5 Zambia  Chingola Sorghum       7  2013  2.00
```

```
#Different types of markets
Zambia_Food_Prices['market'] %>% unique() %>% count()
```

```
## # A tibble: 1 x 1
##       n
##   <int>
## 1    75
```

```
#Different types of food items
Zambia_Food_Prices['food_type'] %>% unique() %>% count()
```

```
## # A tibble: 1 x 1
##       n
##   <int>
## 1     9
```

```
#Total Number of different food items sold on all occassions
Zambia_Food_Prices %>% count(food_type)
```

```
## # A tibble: 9 x 2
##   food_type                          n
##   <chr>                          <int>
## 1 Beans (dry)                     3878
## 2 Cassava meal                     940
## 3 Groundnuts (shelled)            3633
## 4 Maize (white)                   7498
## 5 Maize meal (white, breakfast)   3993
## 6 Maize meal (white, roller)      2851
## 7 Millet                           631
## 8 Rice (local)                    2740
## 9 Sorghum                          210
```

```
#Mean price of every food item
Zambia_Food_Prices %>% group_by(food_type) %>% summarise(mean(price))
```

```
## # A tibble: 9 x 2
##   food_type                      `mean(price)`
##   <chr>                                  <dbl>
## 1 Beans (dry)                            13.4
## 2 Cassava meal                            4.43
## 3 Groundnuts (shelled)                   13.9
## 4 Maize (white)                           1.31
## 5 Maize meal (white, breakfast)           2.92
## 6 Maize meal (white, roller)              2.27
## 7 Millet                                  3.03
## 8 Rice (local)                           10.6
## 9 Sorghum                                 4.11
```

```
#Mean price of every food item in different markets
Zambia_Food_Prices %>% group_by(market, food_type) %>% summarise(mean(price))
```

```
## # A tibble: 446 x 3
## # Groups: market [?]
##    market  food_type                     `mean(price)`
##    <chr>   <chr>                                 <dbl>
##  1 Chadiza Beans (dry)                           16.4
##  2 Chadiza Groundnuts (shelled)                  16.4
##  3 Chadiza Maize (white)                          1.01
##  4 Chadiza Maize meal (white, breakfast)          2.93
##  5 Chama   Beans (dry)                           12.1
##  6 Chama   Groundnuts (shelled)                  12.8
##  7 Chama   Maize (white)                          1.60
##  8 Chama   Maize meal (white, breakfast)         3.23
##  9 Chama   Rice (local)                          10.2
## 10 Chavuma Beans (dry)                          13.9
## # ... with 436 more rows
```

```
#Mean price per year
Zambia_Food_Prices %>% group_by(year,food_type) %>% summarise(mean(price))
```

```
## # A tibble: 60 x 3
## # Groups: year [?]
##     year food_type     `mean(price)`
##    <int> <chr>                 <dbl>
##  1  2003 Maize (white)         0.751
##  2  2004 Maize (white)         0.638
##  3  2005 Maize (white)         0.849
##  4  2006 Maize (white)         0.822
##  5  2007 Maize (white)         0.767
##  6  2008 Maize (white)         1.08
##  7  2009 Maize (white)         1.37
##  8  2010 Maize (white)         1.22
##  9  2011 Maize (white)         1.10
## 10  2012 Beans (dry)          10.7
## # ... with 50 more rows
```

```
#Mean price per month
Zambia_Food_Prices %>% group_by(month,food_type) %>% summarise(mean(price))
```

```
## # A tibble: 108 x 3
## # Groups: month [?]
##    month food_type                    `mean(price)`
##    <int> <chr>                                <dbl>
##  1     1 Beans (dry)                          13.7
##  2     1 Cassava meal                          4.51
##  3     1 Groundnuts (shelled)                 14.5
##  4     1 Maize (white)                         1.50
##  5     1 Maize meal (white, breakfast)         3.11
##  6     1 Maize meal (white, roller)            2.40
##  7     1 Millet                                3.29
##  8     1 Rice (local)                         10.5
##  9     1 Sorghum                               4.06
## 10     2 Beans (dry)                          13.1
## # ... with 98 more rows
```

```
#Mean price per year per month
Zambia_Food_Prices %>% group_by(year,month,food_type) %>% summarise(mean(price))
```

```
## # A tibble: 589 x 4
## # Groups: year, month [?]
##     year month food_type     `mean(price)`
##    <int> <int> <chr>                 <dbl>
##  1  2003     1 Maize (white)         1.16
##  2  2003     2 Maize (white)         1.15
##  3  2003     3 Maize (white)         1.01
##  4  2003     4 Maize (white)         0.753
##  5  2003     5 Maize (white)         0.594
##  6  2003     6 Maize (white)         0.556
##  7  2003     7 Maize (white)         0.550
##  8  2003     8 Maize (white)         0.611
##  9  2003     9 Maize (white)         0.662
## 10  2003    10 Maize (white)         0.645
## # ... with 579 more rows
```

```
#Findina the trend of mean food price per food item over the years
Zambia_Food_Prices %>% group_by(year, food_type) %>% summarise(mean_price = mean(price)) %>%
  ggplot(aes(x=year, y=mean_price)) +
  geom_line(size = 1.0, color = "blue") +
  geom_point(size = 2.0, color = "blue") +
  facet_wrap(~ food_type, ncol = 4, scales = "free") +
  theme(axis.text.x = element_text(size = 5.0))
```