In [2]:

```
# ============================================================================
# CONSUMPTION 23 JULY MALAWI VILLAGE
# ============================================================================

root_path = 'C:/Users/rodri/Dropbox/Malawi/SIEG2021 (1)/2023 July'
path_22 = 'C:/Users/rodri/Dropbox/Malawi/SIEG2021 (1)/2022 July/Data/Clean data/Phas
path_feb23 = 'C:/Users/rodri/Dropbox/Malawi/SIEG2021 (1)/2023 Feb/Data/Clean data/Ph

import numpy as np
import pandas as pd
import os
os.chdir(root_path+'/Code/Phase 3/Auxiliary files')
from data_functions_albert import remove_outliers, gini

import warnings
warnings.filterwarnings('ignore')


# Set the working directory
os.chdir(root_path+'/Data/Clean data/Phase 3 - Consumption, Transfers, Income/Consum

save=True

## Display  set-up
pd.options.display.float_format = '{:,.2f}'.format
pd.set_option('display.max_rows', None)
pd.set_option('display.max_columns', None)


percentiles = [0.05, 0.1, .25, .5, .75, 0.8, 0.9, 0.95, 0.99]

#July 14th 2022 MWK vs US dollar
#dollar_MWK = 1030.36

# July 1st 2023 MWK vs dollar (official)
dollar_MWK = 1052
# Import village 19 data
data19 = pd.read_csv(path_22+'cons_22_3months.csv')



# ============================================================================
# Import data: Data from the field and conversion rates (ISA-LSMS price conversions)
# ============================================================================

data = pd.read_stata(root_path+"/Data/Raw data/[3]-SIEG-Consumption + Agriculture +

##### Create conversion kg matrix(unitxitems) with the exact same names and units la


#item labels data
list_items = ['maizemgaiwa', 'maizerefined', 'maizemadeya', 'maizegrain', 'greenmaiz
, 'ipotatoes', 'potatocrisps', 'bbean', 'pigeonpea', 'groundnut', 'groundnutf', 'oni
'driedfish', 'fleshfish', 'goat', 'chicken', 'otherpoultry', 'smockedfish', 'mango',
'wildfruits',  'sugar', 'sugarcane', 'cookingoil', 'softdrinks',
'thobwa', 'locallybrewed', 'salt', 'fingermillet', 'mandazidou']


'''
noncon_items = ['potatocrisps','otherpoultry','mango','guava', 'locallybrewed','fing

for element in list_items:
```

```
    if element in noncon_items:
        list_items.remove(element)
'''


### NOTE ON CONVERSIONS ================================
# Using ISA-LSMS 17 I didnt have crop-units conversions for several units. What I ma
# 1. Check if missing units are the ones from upper numbers (above 25)
# 2. Use conversion units from the production side for the crop-units possible: pail
# 3. Use conversion units from the consumption side of an older ISA-LSMS (15): bale,
conversionkg_pivot = pd.read_csv(root_path+'/Data/auxiliary files/conversionkg_final

#4.  All units have at least one crop conversion. To fill the whole matrix I use the
conversionkg_pivot = conversionkg_pivot.apply(lambda x: x.fillna(x.median()),axis=1)

conversion_median =conversionkg_pivot.median(axis=1).to_frame()
conversion_median.columns =['conversionkg']

#if save==True:
#    conversion_median.to_csv('conversions/median_conversions_kg.csv')

# ============================================================================
# Generate empty variables
# ============================================================================

#Obtain the names of the variables per each question of item. Question c is monetary
a_var = []
b_var = []
c_var = []
d_var = []

#Generate variable lables in a list
for item in list_items :
    a = item+'_a'
    b= item+'_b'
    c = item+'_c'  ## expenditure
    d = item+'_d'

    a_var.append(a)
    b_var.append(b)
    c_var.append(c)
    d_var.append(d)

list_questions = ['a','b','d']


# check question on whether did something in return and what


# convert all empty observations to 0. I do that to convert empty units to 99. If no
# Note that empty doesn't necessary mean 0, so we careful at looking the data
#data = data.stack().apply(pd.to_numeric, errors='ignore').fillna(0).unstack()

# Drop nan observations. Also drop unit 25 (number not in our choices). Also drop 24

#there is an issue with unit 3 for some items. Diddnt have this problem in 2019 or i
# unit3 refers to consumption coming from own-production. thus, it is natural that t

data['ipotatoes_unit3'] = np.nan
data['potatocrisps_unit3'] = np.nan
data['cabbage_unit3'] = np.nan
data['driedfish_unit3'] = np.nan
data['fleshfish_unit3'] = np.nan
data['goat_unit3'] = np.nan
```

```
data['otherpoultry_unit2'] = np.nan
data['smockedfish_unit3'] = np.nan
data['sugar_unit3'] = np.nan
data['cookingoil_unit3'] = np.nan
data['softdrinks_unit3'] = np.nan
data['locallybrewed_unit3'] = np.nan
data['salt_unit3'] = np.nan
data['mandazidou_unit3'] = np.nan

#Find the households-questions that reported other units.
df_other_units = pd.DataFrame(columns=['hhid','question', 'other_unit'])
for var in list_items:
    for i in range(1,4):   #Loop over unit questions.
        # Find who said other units
        other_units_guy = data.loc[data[var+'_unit'+str(i)]=='other', ['hhid', var+'
        if other_units_guy.empty:
            continue
        else:
            d = {'hhid': other_units_guy.iloc[:,0], 'question': other_units_guy.colu
            row = pd.DataFrame(data=d)
            df_other_units = df_other_units.append(row)

df_other_units['kg'] = np.nan
df_other_units.to_csv(root_path+'/Data/auxiliary files/other_units_consumption.csv')

print('================================================================')
print('All households-item-question combinations that reported "other" units')
print('================================================================')
print(df_other_units)

# Create other units dataset when we have more info



#df_other_units2 = pd.read_excel('other units/other_units_consumption_conversion.xls

### add leandro conversions:

#df_other_units = df_other_units[['hhid',,'other_unit','kg']]







for var in list_items:
    for i in range(1,4):   #Loop over unit questions.
        data[[var+'_unit'+str(i)]] = data[[var+'_unit'+str(i)]].replace('other', 100
        data[[var+'_unit'+str(i)]] = data[[var+'_unit'+str(i)]].replace(np.nan, 99)
        data[[var+'_unit'+str(i)]] = data[[var+'_unit'+str(i)]].replace(25, 99)
        data[[var+'_unit'+str(i)]] = data[[var+'_unit'+str(i)]].replace(23, 99)
        data[[var+'_unit'+str(i)]] = data[[var+'_unit'+str(i)]].replace(0, 99)
        data[[var+'_unit'+str(i)]] = data[[var+'_unit'+str(i)]].replace('', 99)







#%% ============================================================================
#   Convert to kgs:
# ============================================================================

# Generate kg variables empty
for item in list_items:
```

```
    # items not yet in the data:

    for q in list_questions:
        data[item+'_'+q+'kg']= np.nan  # from total reported quantity   (rice_akg: t
    data[item+'_kg2']= np.nan  # from summing bought+own-produced (rice_kg2: bought+
    data[item+'_difftotal_kg']= np.nan # difference total reported - bought+own-prod

print('================================================================')
print('a: Total Consumption')
print('================================================================')
for var in a_var:
    item = var[:-2]

    for i in range(len(data)):
        unit_code = int(data.iloc[i,  data.columns.get_loc(item+'_unit1')])
        data.iloc[i,data.columns.get_loc(var+'kg')] = data.iloc[i,data.columns.get_l
    print(data[[var+'kg']].describe())




print('b: Bought')
for var in b_var:
    item = var[:-2]
    for i in range(len(data)):
        data.iloc[i,data.columns.get_loc(var+'kg')] = data.iloc[i,data.columns.get_l

    print(data[[var+'kg']].describe())



print('d: Own-produced')
for var in d_var:
    item = var[:-2]
    for i in range(len(data)):
        data.iloc[i,data.columns.get_loc(var+'kg')] = data.iloc[i,data.columns.get_l
    print(data[[var+'kg']].describe())



## convert other units:
data.loc[data['hhid']==1319, 'softdrinkgs_akg'] = 3*(0.33)
data.loc[data['hhid']==1319, 'softdrinkgs_bkg'] = 3*(0.33)



### CHECK households with an extreme value of a food kg consumption from previous de
# First check if it is an issue of conversion units.
# IF not, we might have to reinterview them or use the consumption summing bought, o

print('Consumption (kg) extreme values in: maizzemgaiwa, wsweetpotatoes, osweetpotat

# maize: quite a few hhs above 20kgs. 2 hhs above 50 kg
data.loc[data['maizemgaiwa_akg']>20,['maizemgaiwa_akg','maizemgaiwa_bkg','maizemgaiw

data.loc[data['maizemgaiwa_akg']>50,['maizemgaiwa_akg','maizemgaiwa_unit1','maizemga
# unit 2: 50kg bag, unit 5 pail numb 10.

# REPLACE extreme values for median (let's be careful with this)
# WE MIGHT WANT TO CHANGE THESE CORRECTIONS OF EXTREME VALUES

data.loc[data['maizemgaiwa_akg']>50,['maizemgaiwa_akg']] = data['maizemgaiwa_akg'].m
```

```
data.loc[data['wsweetpotatoes_akg']>19,['wsweetpotatoes_akg']] = data['wsweetpotatoe
data.loc[data['osweetpotatoes_akg']>19,['osweetpotatoes_akg']] = data['osweetpotatoe
data.loc[data['potatocrisps_akg']>2,['potatocrisps_akg']] = data['potatocrisps_akg']
data.loc[data['pigeonpea_akg']>19,['pigeonpea_akg']] = data['pigeonpea_akg'].median(

# onion and cbbage 8kg... Might likely be outliers but for the moment keep their val
data.loc[data['leafyvegetables_akg']>5,['leafyvegetables_akg']] = data['leafyvegetab
data.loc[data['eggs_akg']>19,['eggs_akg']] = data['eggs_akg'].median()
data.loc[data['fleshfish_akg']>19,['fleshfish_akg']] = data['fleshfish_akg'].median(
data.loc[data['banana_akg']>19,['banana_akg']] = data['banana_akg'].median()
data.loc[data['banana_akg']>19,['banana_akg']] = data['banana_akg'].median()
data.loc[data['guava_akg']>19,['guava_akg']] = data['guava_akg'].median()

data.loc[data['wildfruits_akg']>5,['wildfruits_akg']] = data['wildfruits_akg'].media
data.loc[data['sugar_akg']>5,['sugar_akg']] = data['sugar_akg'].median()

data.loc[data['mandazidou_akg']>10,['mandazidou_akg']] = data['mandazidou_akg'].medi
data.loc[data['thobwa_akg']>19,['thobwa_akg']] = data['thobwa_akg'].median()



# there might be some other outliers. for the moment to be careful, I keep them as t

print('================================================================')
print('a: Total Consumption (in kg) after corrections (cleaned)')
print('================================================================')

for var in a_var:
    item = var[:-2]
    print(data[[var+'kg']].describe())



# replace in units bought
data.loc[data['maizemgaiwa_bkg']>50,['maizemgaiwa_bkg']] = data['maizemgaiwa_bkg'].m
data.loc[data['wsweetpotatoes_bkg']>19,['wsweetpotatoes_bkg']] = data['wsweetpotatoe
data.loc[data['osweetpotatoes_bkg']>19,['osweetpotatoes_bkg']] = data['osweetpotatoe
data.loc[data['potatocrisps_bkg']>2,['potatocrisps_bkg']] = data['potatocrisps_bkg']
data.loc[data['pigeonpea_bkg']>19,['pigeonpea_bkg']] = data['pigeonpea_bkg'].median(

# onion and cbbage 8kg... Might likely be outliers but for the moment keep their val
data.loc[data['leafyvegetables_bkg']>5,['leafyvegetables_bkg']] = data['leafyvegetab
data.loc[data['eggs_bkg']>19,['eggs_bkg']] = data['eggs_bkg'].median()
data.loc[data['fleshfish_bkg']>19,['fleshfish_bkg']] = data['fleshfish_bkg'].median(
data.loc[data['banana_bkg']>19,['banana_bkg']] = data['banana_bkg'].median()
data.loc[data['banana_bkg']>19,['banana_bkg']] = data['banana_bkg'].median()
data.loc[data['guava_bkg']>19,['guava_bkg']] = data['guava_bkg'].median()

data.loc[data['wildfruits_bkg']>5,['wildfruits_bkg']] = data['wildfruits_bkg'].media
data.loc[data['sugar_bkg']>5,['sugar_bkg']] = data['sugar_bkg'].median()

data.loc[data['mandazidou_bkg']>10,['mandazidou_bkg']] = data['mandazidou_bkg'].medi
data.loc[data['thobwa_bkg']>19,['thobwa_bkg']] = data['thobwa_bkg'].median()



### compute total quantity kg 2 (bought+own produced)
for item in list_items:
    data[item+'_kg2']= data[item+'_bkg'].fillna(0) + data[item+'_dkg'].fillna(0)
    data[item+'_difftotal_kg']= data[item+'_akg'].fillna(0) - data[item+'_kg2'].fill
```

```
#Check

#check total consumption in kgs
data['total_foodkg'] = 0
data['total_foodkg2'] = 0
data['purchased_kg'] = 0
data['ownproduced_kg'] = 0

for item in list_items:
    data['total_foodkg'] += data[item+'_akg'].replace(np.nan, 0)
    data['purchased_kg'] += data[item+'_bkg'].replace(np.nan, 0)
    data['ownproduced_kg'] += data[item+'_dkg'].replace(np.nan, 0)

data['total_foodkg2'] =  data['purchased_kg'] + data['ownproduced_kg']
sumtotalfoodkg = data[['total_foodkg', 'total_foodkg2', 'purchased_kg','ownproduced_
print('================================================================')

print('==== Summary Food Consumption last 7 days in kgs aggregated across items ====
print('================================================================')
print(sumtotalfoodkg)

print('Foodkg is reported total food consumption. foodkg2 is the sum of purchases an

print('potential to-do: compute purchases+own_produced+transfers.')

print('')
print('================================================================')
print('Check: Total kg vs Bought+own-produced kg.(All food items together)')
print('================================================================')

buy_larger_total = data.loc[(data['purchased_kg']>data['total_foodkg']+2),['hhid','t
prod_larger_total = data.loc[(data['ownproduced_kg']>data['total_foodkg']+2),['hhid'
print('Reported c-buying more kg than total kg consumption')
print(buy_larger_total)
print('Reported c-ownproducing kg more kg than total kg consumption')
print(prod_larger_total)

print('Seems own-produced consumption wasnt clear, many larger than total consumptio
#  FOR THE MOMENT I DO NOT CORRECT THEM SINCE WE DON'T USE OWNPRODUCED.




### Note that outliers have been removed from total quantity but not necessarily fro
'''
for item in list_items:
    print(data[item+'_difftotal_kg'].describe())     #if distribution difference per

liers_boughtprod_larger_total = []
liers_total_larger_boughtprod = []
# Check reported consumption in kg per each crop.
for item in list_items:
    df1 = data.loc[data[item+'_difftotal_kg']<-2, 'hhid']
    df2 = data.loc[data[item+'_difftotal_kg']>10, 'hhid']
    if not df1.empty:
        liers_boughtprod_larger_total.append(item)
        liers_boughtprod_larger_total.append(df1)
    if not df2.empty:
        liers_total_larger_boughtprod.append(item)
        liers_total_larger_boughtprod.append(df2)
print('================================================================')
print('Hhs that reported kg consumption from buying+own production larger than total
print('================================================================')
```

```
print(liers_boughtprod_larger_total)
print('============================================================')
print('Hhs that reported total kg consumption MUCH larger than from buying+own produ
print('============================================================')
print(liers_total_larger_boughtprod)

print('these could be potential outliers')
'''


#%%  CONVERT TO MONETARY VALUE

# Compute village prices:

# Generate price variables
for item in list_items:
        data[item+'_price']= np.nan

# price per household
for item in list_items:
    data[item+'_price'] = data[item+'_c'] / data[item+'_bkg'].replace(0,np.nan)

price_data = pd.DataFrame(list_items, columns=['good'])
price_data['p_c'] = np.nan

for item in list_items:
    print('Median Price 1 kg of '+item)
    data['med_price_'+item] = data[item+'_price'].median()
    print(data['med_price_'+item].mean())
    price_data.loc[price_data['good']==item,'p_c'] = data['med_price_'+item].mean()

print('median price of eggs is very cheap. Greenmaize, wildfruits, sugarcane, thobwa


 ### For nan values use price of similar food items
price_data.loc[price_data['good']=='otherpoultry','p_c'] = float(price_data.loc[pric


if save==True:
    price_data.to_csv('prices/village_c_prices_jul23.csv', index=False)


# For the check let's use the prices from the village in 2019
p_22 = pd.read_csv(path_22+'prices/village_c_prices_22.csv')
p_feb23 =(path_feb23+'prices/village_c_prices_feb23')
p_22.columns = ['good', 'p_c_22']
p_22 = p_22.merge(price_data, on='good', how='outer')
p_22.columns = ['good', 'p_c_22', 'p_c_23']

print(' Comparison median consumption prices (per kg) in the villlage: 2022 vs 2023
print(p_22)

# for weird values use numbers from july 2022

price_data.loc[price_data['good']=='eggs','p_c'] = p_22.loc[p_22['good']=='eggs','p_
price_data.loc[price_data['good']=='greenmaize','p_c'] = p_22.loc[p_22['good']=='gre
print('corrected prices of eggs and greenmaize')


for item in list_items:
    for q in list_questions:
        data[item+'_'+q+'MWK']= np.nan

# Total consumption
```

```
for item in list_items:
    #print(item)
    data[item+'_aMWK'] = data[item+'_akg']*float(price_data.loc[price_data['good']==
    '''
    if data[item+'_aMWK'].count()>0:
        print('Food Consumption in MWK during last 7 days item: '+item)
        print(data[item+'_aMWK'].describe(percentiles=percentiles))
    '''


# Bought
for item in list_items:
    #print(item)
    data[item+'_bMWK'] = data[item+'_bkg']*float(price_data.loc[price_data['good']==

# own-produced
for item in list_items:
    #print(item)
    data[item+'_dMWK'] = data[item+'_dkg']*float(price_data.loc[price_data['good']==


#check total consumption
data['c_food'] = 0
data['c_food_purch'] = 0
data['c_food_ownprod'] = 0

for item in list_items:
    data['c_food'] += data[item+'_aMWK'].replace(np.nan, 0)
    data['c_food_purch'] += data[item+'_bMWK'].replace(np.nan, 0)
    data['c_food_ownprod'] += data[item+'_dMWK'].replace(np.nan, 0)

data[['c_food', 'c_food_purch' , 'c_food_ownprod']] = data[['c_food', 'c_food_purch'


pd.options.display.float_format = '{:,.2f}'.format
sumcfood= ((data[['c_food', 'c_food_purch' , 'c_food_ownprod']]/dollar_MWK).replace(
print('================================================================')
print('==== Summary Food Consumption 7 days in $ =======')
print('================================================================')
print(sumcfood)


#%% non-food consumption  (month)



data['c_housing'] = data['nonf_cons_a_1']*3
data['c_clothes'] = data['nonf_cons_b_1']
data['c_education'] = data['nonf_cons_c_1']
data['c_health'] = data['nonf_cons_d_1']
data['c_funeralout'] = data['nonf_cons_e_1']
data['c_funeralin'] = data['nonf_cons_f_1']
data['c_weddingout'] = data['nonf_cons_g_1']
data['c_weddingin'] = data['nonf_cons_h_1']

## outliers checked by Augustine. One of the extreme values verified. Some hh move o


data['c_nonfood'] = data[['c_housing', 'c_clothes', 'c_education', 'c_health', 'c_fu

sum_cnonfood = ((data[['c_nonfood','c_housing', 'c_clothes', 'c_education', 'c_healt
print('================================================================')
print(' SUMMARY  NON-FOOD CONSUMPTION (3 MONTH LEVEL)')
print('================================================================')
```

```
print('summary in MWK')
print(sum_cnonfood)
print('There are some potential outliers')

print('Households above 500$ 3 months expenditure in non-food')
data.loc[data['c_nonfood']>500*dollar_MWK,['hhid','c_nonfood','c_housing', 'c_clothe

print('hhid=1003 big expenditure. especially in education (600$) and clothes (400$).
print('Extreme values not corrected. check if these are rich households')



#%% SAVE DATASET


#data[['c_food_purch','c_food_ownprod']] = remove_outliers(data[['c_food_purch','c_f

## short dataset
datacon_short = data[['hhid','c_food','c_food_purch','c_food_ownprod', 'c_nonfood','

## Food at 3 months level
datacon_short[['c_food','c_food_purch','c_food_ownprod']] = datacon_short[['c_food',
datacon_short['ctotal'] = datacon_short[['c_nonfood', 'c_food']].sum(axis = 1, skipn


if save==True:
    datacon_short.to_csv('cons_jul23_3months.csv', index=False)


## Consumption at year level
datacon_short[['ctotal','c_food','c_food_purch','c_food_ownprod', 'c_nonfood','c_hou

c_summary =  ((datacon_short[['ctotal','c_food','c_food_purch','c_food_ownprod', 'c_

print('================================================================')
print('Consumption Summary (1 year, in $)')
print('================================================================')
print(c_summary)

print('total consumption')
print('variance of the log',np.var(np.log(datacon_short[['ctotal']])))
print('Gini',gini(datacon_short[['ctotal']]))

print('food consumption')
print('variance of the log',np.var(np.log(datacon_short[['c_food']])))
print('Gini',gini(datacon_short[['c_food']]))

if save==True:
    datacon_short.to_csv('cons_jul23_year.csv', index=False)
    print('================================================')
    print('final datasets saved in clean data/phase 3/Consumption/')
    print(' dataset 1:  cons_jul23_3months.csv (variables aggregated at 3 months lev
    print('2.cons_jul23_months_year.csv (variables aggregated at year level) ')
    print('================================================')
    print('datasets contain the following variables')
    print(datacon_short.columns)
    print('Monetary variables are in MWK unless mentioned othw')
```

```
============================================================
All households-item-question combinations that reported "other" units
============================================================
     hhid          question other_unit  quantity  kg
92   1214        rice_unit1  Chikang'a      1.00 nan
125  1307        rice_unit1  Chikang'a      5.00 nan
```

```
226  1515        rice_unit1  Chikang'a      2.00 nan
92   1214        rice_unit2  Chikang'a      1.00 nan
125  1307        rice_unit2  Chikang'a      5.00 nan
226  1515        rice_unit2  Chikang'a      2.00 nan
161  1348       bbean_unit1  Chikang'a      2.00 nan
254  2003       bbean_unit1  Chikang'a      4.00 nan
161  1348       bbean_unit2  Chikang'a      2.00 nan
254  2003       bbean_unit2  Chikang'a      4.00 nan
135  1319  softdrinks_unit1    Bottles      3.00 nan
135  1319  softdrinks_unit2    Bottles      3.00 nan
================================================================
a: Total Consumption
================================================================
       maizemgaiwa_akg
count           196.00
mean             10.52
std              10.11
min               1.00
25%               5.00
50%               9.60
75%              14.55
max             100.00
       maizerefined_akg
count            183.00
mean               8.47
std                5.93
min                0.50
25%                3.00
50%               10.00
75%               10.00
max               30.00
       maizemadeya_akg
count           127.00
mean              3.62
std               2.78
min               1.00
25%               1.43
50%               2.86
75%               4.50
max              13.50
       maizegrain_akg
count           74.00
mean             0.58
std              0.57
min              0.18
25%              0.35
50%              0.43
75%              0.75
max              5.00
       greenmaize_akg
count           30.00
mean             2.99
std              2.85
min              0.34
25%              1.00
50%              2.00
75%              4.00
max             12.00
       rice_akg
count    96.00
mean      1.05
std       1.00
min       0.18
25%       0.42
50%       0.71
75%       1.25
max       5.33
       cassavatubers_akg
count              60.00
```

```
mean               1.29
std                1.99
min                0.32
25%                0.32
50%                0.63
75%                1.34
max               10.00
       wsweetpotatoes_akg
count              257.00
mean                 3.58
std                  3.04
min                  0.43
25%                  1.26
50%                  2.53
75%                  4.33
max                 21.96
       osweetpotatoes_akg
count              110.00
mean                 1.88
std                  2.44
min                  0.23
25%                  1.00
50%                  1.16
75%                  2.33
max                 20.00
       ipotatoes_akg
count           9.00
mean            0.95
std             0.57
min             0.43
25%             0.50
50%             0.67
75%             1.33
max             2.00
       potatocrisps_akg
count              7.00
mean               1.12
std                1.43
min                0.43
25%                0.43
50%                0.50
75%                0.85
max                4.33
       bbean_akg
count     37.00
mean       0.69
std        0.44
min        0.17
25%        0.43
50%        0.43
75%        0.87
max        2.50
       pigeonpea_akg
count         275.00
mean            1.91
std             2.49
min             0.30
25%             0.60
50%             1.20
75%             1.80
max            21.67
       groundnut_akg
count         230.00
mean            0.97
std             1.14
min             0.03
25%             0.43
50%             0.50
75%             1.00
```

```
max             5.00
       groundnutf_akg
count          243.00
mean             0.21
std              0.25
min              0.02
25%              0.10
50%              0.10
75%              0.20
max              2.17
       onion_akg
count     121.00
mean        0.75
std         1.59
min         0.08
25%         0.16
50%         0.24
75%         0.41
max         8.00
       cabbage_akg
count        32.00
mean          2.09
std           1.49
min           0.24
25%           1.81
50%           2.00
75%           2.00
max           8.00
       tanaposi_akg
count        219.00
mean           0.88
std            0.60
min            0.23
25%            0.46
50%            0.70
75%            1.16
max            3.83
       leafyvegetables_akg
count               208.00
mean                  0.92
std                   1.30
min                   0.14
25%                   0.29
50%                   0.50
75%                   0.87
max                   8.67
       tomato_akg
count      279.00
mean         1.79
std          1.25
min          0.22
25%          0.50
50%          1.76
75%          2.64
max          6.15
       eggs_akg
count     96.00
mean       5.43
std        5.91
min        0.06
25%        0.24
50%        4.00
75%       10.00
max       22.00
       driedfish_akg
count         157.00
mean            0.75
std             0.45
min             0.24
```

```
25%             0.35
50%             0.70
75%             1.04
max             2.43
       fleshfish_akg
count         108.00
mean            0.98
std             2.29
min             0.35
25%             0.35
50%             0.70
75%             1.04
max            24.00
       goat_akg
count     46.00
mean       0.67
std        0.47
min        0.12
25%        0.43
50%        0.50
75%        1.00
max        3.00
       chicken_akg
count        52.00
mean          2.48
std           1.46
min           0.43
25%           2.00
50%           2.00
75%           2.46
max           9.83
       otherpoultry_akg
count              9.00
mean               3.06
std                1.28
min                2.00
25%                2.00
50%                2.00
75%                4.00
max                4.75
       smockedfish_akg
count           191.00
mean              0.70
std               0.52
min               0.27
25%               0.33
50%               0.67
75%               1.00
max               4.00
       mango_akg
count       1.00
mean        0.20
std          nan
min         0.20
25%         0.20
50%         0.20
75%         0.20
max         0.20
       banana_akg
count      119.00
mean         2.44
std          3.07
min          0.17
25%          1.14
50%          1.14
75%          2.29
max         20.00
       guava_akg
count      89.00
```

```
mean        2.56
std         4.19
min         0.09
25%         0.34
50%         0.50
75%         3.14
max        20.00
       wildfruits_akg
count           60.00
mean             3.06
std              5.84
min              0.21
25%              0.50
50%              0.50
75%              2.00
max             30.00
       sugar_akg
count     202.00
mean        4.16
std        31.24
min         0.02
25%         0.18
50%         0.39
75%         0.50
max       297.83
       sugarcane_akg
count         171.00
mean            4.83
std             3.89
min             0.24
25%             2.00
50%             4.00
75%             6.00
max            20.00
       cookingoil_akg
count          261.00
mean             0.33
std              0.20
min              0.07
25%              0.20
50%              0.33
75%              0.40
max              2.00
       softdrinks_akg
count           24.00
mean             0.50
std              0.27
min              0.15
25%              0.33
50%              0.50
75%              0.59
max              1.00
       thobwa_akg
count      154.00
mean         6.14
std          7.11
min          0.18
25%          0.55
50%          2.06
75%         10.00
max         30.00
       locallybrewed_akg
count               1.00
mean               0.35
std                 nan
min                0.35
25%                0.35
50%                0.35
75%                0.35
```

```
max                0.35
       salt_akg
count    284.00
mean       0.24
std        0.21
min        0.06
25%        0.11
50%        0.22
75%        0.33
max        3.00
       fingermillet_akg
count             10.00
mean               1.47
std                1.83
min                0.11
25%                0.26
50%                0.53
75%                2.12
max                5.00
       mandazidou_akg
count           94.00
mean             2.51
std              5.01
min              0.06
25%              0.12
50%              0.24
75%              1.73
max             24.00
b: Bought
       maizemgaiwa_bkg
count           112.00
mean             12.19
std              12.01
min               1.25
25%               5.00
50%               9.60
75%              15.00
max             100.00
       maizerefined_bkg
count             58.00
mean               9.44
std                6.00
min                1.50
25%                5.00
50%               10.00
75%               10.00
max               30.00
       maizemadeya_bkg
count             21.00
mean               2.87
std                2.24
min                1.43
25%                1.43
50%                1.43
75%                4.36
max               10.00
       maizegrain_bkg
count           24.00
mean             0.48
std              0.20
min              0.18
25%              0.35
50%              0.35
75%              0.75
max              0.75
       greenmaize_bkg
count           20.00
mean             2.81
std              3.17
```

```
min              0.34
25%              0.67
50%              2.00
75%              2.77
max             12.00
       rice_bkg
count     78.00
mean       1.00
std        0.82
min        0.18
25%        0.42
50%        0.71
75%        1.25
max        5.00
       cassavatubers_bkg
count              16.00
mean                1.03
std                 0.96
min                 0.32
25%                 0.32
50%                 0.63
75%                 1.34
max                 4.00
       wsweetpotatoes_bkg
count              129.00
mean                 2.69
std                  1.72
min                  0.43
25%                  1.26
50%                  2.53
75%                  3.79
max                 10.11
       osweetpotatoes_bkg
count               54.00
mean                 1.88
std                  2.00
min                  0.23
25%                  1.16
50%                  1.16
75%                  2.33
max                 10.00
       ipotatoes_bkg
count           8.00
mean            0.81
std             0.44
min             0.43
25%             0.48
50%             0.58
75%             1.33
max             1.33
       potatocrisps_bkg
count              7.00
mean               1.06
std                1.45
min                0.43
25%                0.43
50%                0.43
75%                0.68
max                4.33
       bbean_bkg
count     32.00
mean       0.73
std        0.46
min        0.17
25%        0.41
50%        0.70
75%        1.00
max        2.50
       pigeonpea_bkg
```

```
count           2.00
mean            0.70
std             0.42
min             0.40
25%             0.55
50%             0.70
75%             0.85
max             1.00
       groundnut_bkg
count          48.00
mean            0.96
std             1.25
min             0.21
25%             0.43
50%             0.50
75%             0.85
max             5.00
       groundnutf_bkg
count           67.00
mean             0.21
std              0.20
min              0.02
25%              0.10
50%              0.10
75%              0.20
max              1.00
       onion_bkg
count     114.00
mean        0.75
std         1.63
min         0.08
25%         0.16
50%         0.24
75%         0.41
max         8.00
       cabbage_bkg
count        23.00
mean          2.46
std           1.53
min           0.24
25%           2.00
50%           2.00
75%           2.00
max           8.00
       tanaposi_bkg
count        186.00
mean           0.83
std            0.53
min            0.23
25%            0.46
50%            0.70
75%            1.16
max            3.48
       leafyvegetables_bkg
count                21.00
mean                  0.62
std                   0.73
min                   0.14
25%                   0.29
50%                   0.43
75%                   0.58
max                   3.50
       tomato_bkg
count      207.00
mean         1.90
std          1.19
min          0.22
25%          0.88
50%          1.76
```

```
75%          2.64
max          6.15
       eggs_bkg
count     58.00
mean       5.12
std        5.57
min        0.12
25%        0.30
50%        4.00
75%        8.00
max       20.00
       driedfish_bkg
count         154.00
mean            0.75
std             0.44
min             0.24
25%             0.35
50%             0.70
75%             1.04
max             2.43
       fleshfish_bkg
count         104.00
mean            0.99
std             2.32
min             0.35
25%             0.35
50%             0.70
75%             1.04
max            24.00
       goat_bkg
count     21.00
mean       0.82
std        0.58
min        0.43
25%        0.50
50%        0.50
75%        1.00
max        3.00
       chicken_bkg
count        11.00
mean          2.64
std           1.25
min           1.00
25%           2.00
50%           2.00
75%           3.28
max           5.46
       otherpoultry_bkg
count              0.00
mean                nan
std                 nan
min                 nan
25%                 nan
50%                 nan
75%                 nan
max                 nan
       smockedfish_bkg
count           186.00
mean              0.70
std               0.51
min               0.28
25%               0.33
50%               0.67
75%               1.00
max               4.00
       mango_bkg
count       1.00
mean        0.20
std          nan
```

```
min         0.20
25%         0.20
50%         0.20
75%         0.20
max         0.20
       banana_bkg
count       53.00
mean         1.90
std          2.94
min          0.17
25%          1.01
50%          1.14
75%          1.35
max         20.00
       guava_bkg
count      15.00
mean        0.99
std         1.99
min         0.09
25%         0.26
50%         0.43
75%         0.50
max         8.00
       wildfruits_bkg
count            9.00
mean             2.03
std              0.94
min              0.25
25%              2.00
50%              2.00
75%              2.00
max              4.00
       sugar_bkg
count    193.00
mean        1.24
std        10.69
min         0.09
25%         0.18
50%         0.35
75%         0.50
max       148.91
       sugarcane_bkg
count         123.00
mean            4.43
std             3.53
min             1.15
25%             2.00
50%             3.46
75%             5.77
max            20.00
       cookingoil_bkg
count          256.00
mean             0.33
std              0.20
min              0.07
25%              0.20
50%              0.33
75%              0.40
max              2.00
       softdrinks_bkg
count           23.00
mean             0.51
std              0.27
min              0.15
25%              0.30
50%              0.50
75%              0.62
max              1.00
       thobwa_bkg
```

```
count        3.00
mean         3.12
std          4.24
min          0.35
25%          0.68
50%          1.00
75%          4.50
max          8.00
       locallybrewed_bkg
count               1.00
mean                0.35
std                  nan
min                 0.35
25%                 0.35
50%                 0.35
75%                 0.35
max                 0.35
       salt_bkg
count    277.00
mean       0.27
std        0.66
min        0.06
25%        0.11
50%        0.22
75%        0.33
max       11.00
       fingermillet_bkg
count              4.00
mean               2.06
std                2.21
min                0.11
25%                0.50
50%                1.57
75%                3.12
max                5.00
       mandazidou_bkg
count           92.00
mean             2.56
std              5.05
min              0.06
25%              0.12
50%              0.24
75%              1.86
max             24.00
d: Own-produced
       maizemgaiwa_dkg
count            79.00
mean              7.98
std               5.88
min               1.00
25%               3.75
50%               5.00
75%              10.00
max              24.00
       maizerefined_dkg
count             99.00
mean               9.13
std                5.37
min                0.50
25%                5.00
50%               10.00
75%               10.00
max               30.00
       maizemadeya_dkg
count            73.00
mean              3.84
std               2.95
min               1.00
25%               1.43
```

```
50%              2.86
75%              4.50
max             13.50
       maizegrain_dkg
count           47.00
mean             0.64
std              0.69
min              0.18
25%              0.35
50%              0.71
75%              0.75
max              5.00
       greenmaize_dkg
count            3.00
mean             3.56
std              2.91
min              0.34
25%              2.34
50%              4.33
75%              5.17
max              6.00
       rice_dkg
count      5.00
mean       1.71
std        1.86
min        0.42
25%        1.00
50%        1.07
75%        1.07
max        5.00
       cassavatubers_dkg
count             27.00
mean               1.41
std                2.46
min                0.32
25%                0.32
50%                0.50
75%                1.42
max               10.00
       wsweetpotatoes_dkg
count              96.00
mean                4.85
std                 3.83
min                 0.50
25%                 2.53
50%                 3.79
75%                 6.27
max                21.96
       osweetpotatoes_dkg
count              42.00
mean                2.22
std                 3.18
min                 0.29
25%                 1.04
50%                 1.16
75%                 2.93
max                20.00
       ipotatoes_dkg
count           0.00
mean             nan
std              nan
min              nan
25%              nan
50%              nan
75%              nan
max              nan
       potatocrisps_dkg
count             0.00
mean               nan
```

```
std                nan
min                nan
25%                nan
50%                nan
75%                nan
max                nan
       bbean_dkg
count       0.00
mean         nan
std          nan
min          nan
25%          nan
50%          nan
75%          nan
max          nan
       pigeonpea_dkg
count         251.00
mean            1.88
std             2.45
min             0.30
25%             0.60
50%             1.20
75%             1.80
max            21.67
       groundnut_dkg
count         129.00
mean            1.04
std             1.18
min             0.03
25%             0.43
50%             0.50
75%             1.00
max             5.00
       groundnutf_dkg
count          131.00
mean             0.22
std              0.31
min              0.02
25%              0.10
50%              0.10
75%              0.20
max              2.17
       onion_dkg
count       4.00
mean        0.43
std         0.26
min         0.24
25%         0.30
50%         0.32
75%         0.45
max         0.81
       cabbage_dkg
count         0.00
mean           nan
std            nan
min            nan
25%            nan
50%            nan
75%            nan
max            nan
       tanaposi_dkg
count         21.00
mean            1.12
std             0.89
min             0.23
25%             0.70
50%             0.93
75%             1.16
max             3.48
```

```
       leafyvegetables_dkg
count               164.00
mean                  0.97
std                   1.37
min                   0.14
25%                   0.29
50%                   0.50
75%                   0.87
max                   8.67
       tomato_dkg
count       60.00
mean         1.46
std          1.30
min          0.43
25%          0.50
50%          0.87
75%          2.20
max          4.39
       eggs_dkg
count     34.00
mean       6.30
std        6.66
min        0.06
25%        0.24
50%        7.00
75%       10.00
max       22.00
       driedfish_dkg
count           0.00
mean             nan
std              nan
min              nan
25%              nan
50%              nan
75%              nan
max              nan
       fleshfish_dkg
count           0.00
mean             nan
std              nan
min              nan
25%              nan
50%              nan
75%              nan
max              nan
       goat_dkg
count      0.00
mean        nan
std         nan
min         nan
25%         nan
50%         nan
75%         nan
max         nan
       chicken_dkg
count        28.00
mean          2.10
std           0.75
min           0.85
25%           2.00
50%           2.00
75%           2.00
max           4.00
       otherpoultry_dkg
count              5.00
mean               2.80
std                1.10
min                2.00
25%                2.00
```

```
50%               2.00
75%               4.00
max               4.00
       smockedfish_dkg
count             0.00
mean               nan
std                nan
min                nan
25%                nan
50%                nan
75%                nan
max                nan
       mango_dkg
count       0.00
mean         nan
std          nan
min          nan
25%          nan
50%          nan
75%          nan
max          nan
       banana_dkg
count       51.00
mean         3.03
std          3.22
min          0.68
25%          1.14
50%          1.69
75%          3.43
max         20.00
       guava_dkg
count      50.00
mean        2.98
std         4.86
min         0.09
25%         0.34
50%         0.50
75%         3.14
max        20.00
       wildfruits_dkg
count           43.00
mean             2.96
std              5.41
min              0.21
25%              0.50
50%              0.50
75%              2.50
max             24.00
       sugar_dkg
count       0.00
mean         nan
std          nan
min          nan
25%          nan
50%          nan
75%          nan
max          nan
       sugarcane_dkg
count          23.00
mean            7.64
std             5.31
min             0.49
25%             3.46
50%             6.92
75%            10.77
max            20.00
       cookingoil_dkg
count            0.00
mean              nan
```

```
std               nan
min               nan
25%               nan
50%               nan
75%               nan
max               nan
       softdrinks_dkg
count            0.00
mean              nan
std               nan
min               nan
25%               nan
50%               nan
75%               nan
max               nan
       thobwa_dkg
count       81.00
mean        10.59
std          7.14
min          0.00
25%          5.00
50%         10.00
75%         15.00
max         30.00
       locallybrewed_dkg
count               0.00
mean                 nan
std                  nan
min                  nan
25%                  nan
50%                  nan
75%                  nan
max                  nan
       salt_dkg
count      0.00
mean        nan
std         nan
min         nan
25%         nan
50%         nan
75%         nan
max         nan
       fingermillet_dkg
count              2.00
mean               2.67
std                2.36
min                1.00
25%                1.83
50%                2.67
75%                3.50
max                4.33
       mandazidou_dkg
count            0.00
mean              nan
std               nan
min               nan
25%               nan
50%               nan
75%               nan
max               nan
Consumption (kg) extreme values in: maizzemgaiwa, wsweetpotatoes, osweetpotatoes, po
tatocrisps, pigeonpea, onion, leafyvegetables,eggs,fleshfish, banana, guava, wildfru
its, sugar, thobwa, mandazidou
============================================================
a: Total Consumption (in kg) after corrections (cleaned)
============================================================
       maizemgaiwa_akg
count           196.00
mean              9.75
```

```
std              6.58
min              1.00
25%              5.00
50%              9.60
75%             14.40
max             33.60
       maizerefined_akg
count            183.00
mean               8.47
std                5.93
min                0.50
25%                3.00
50%               10.00
75%               10.00
max               30.00
       maizemadeya_akg
count            127.00
mean               3.62
std                2.78
min                1.00
25%                1.43
50%                2.86
75%                4.50
max               13.50
       maizegrain_akg
count            74.00
mean              0.58
std               0.57
min               0.18
25%               0.35
50%               0.43
75%               0.75
max               5.00
       greenmaize_akg
count            30.00
mean              2.99
std               2.85
min               0.34
25%               1.00
50%               2.00
75%               4.00
max              12.00
       rice_akg
count     96.00
mean       1.05
std        1.00
min        0.18
25%        0.42
50%        0.71
75%        1.25
max        5.33
       cassavatubers_akg
count              60.00
mean                1.29
std                 1.99
min                 0.32
25%                 0.32
50%                 0.63
75%                 1.34
max                10.00
       wsweetpotatoes_akg
count              257.00
mean                 3.50
std                  2.81
min                  0.43
25%                  1.26
50%                  2.53
75%                  4.33
max                 17.33
```

```
       osweetpotatoes_akg
count              110.00
mean                 1.71
std                  1.71
min                  0.23
25%                  1.00
50%                  1.16
75%                  2.33
max                 10.00
       ipotatoes_akg
count           9.00
mean            0.95
std             0.57
min             0.43
25%             0.50
50%             0.67
75%             1.33
max             2.00
       potatocrisps_akg
count              7.00
mean               0.57
std                0.20
min                0.43
25%                0.43
50%                0.50
75%                0.68
max                0.85
       bbean_akg
count      37.00
mean        0.69
std         0.44
min         0.17
25%         0.43
50%         0.43
75%         0.87
max         2.50
       pigeonpea_akg
count         275.00
mean            1.76
std             1.88
min             0.30
25%             0.60
50%             1.20
75%             1.80
max            13.00
       groundnut_akg
count         230.00
mean            0.97
std             1.14
min             0.03
25%             0.43
50%             0.50
75%             1.00
max             5.00
       groundnutf_akg
count          243.00
mean             0.21
std              0.25
min              0.02
25%              0.10
50%              0.10
75%              0.20
max              2.17
       onion_akg
count     121.00
mean        0.75
std         1.59
min         0.08
25%         0.16
```

```
50%         0.24
75%         0.41
max         8.00
       cabbage_akg
count        32.00
mean          2.09
std           1.49
min           0.24
25%           1.81
50%           2.00
75%           2.00
max           8.00
       tanaposi_akg
count        219.00
mean           0.88
std            0.60
min            0.23
25%            0.46
50%            0.70
75%            1.16
max            3.83
       leafyvegetables_akg
count               208.00
mean                  0.85
std                   1.05
min                   0.14
25%                   0.29
50%                   0.50
75%                   0.85
max                   4.33
       tomato_akg
count      279.00
mean         1.79
std          1.25
min          0.22
25%          0.50
50%          1.76
75%          2.64
max          6.15
       eggs_akg
count     96.00
mean       4.41
std        4.47
min        0.06
25%        0.24
50%        4.00
75%        8.00
max       16.00
       driedfish_akg
count         157.00
mean            0.75
std             0.45
min             0.24
25%             0.35
50%             0.70
75%             1.04
max             2.43
       fleshfish_akg
count         108.00
mean            0.76
std             0.47
min             0.35
25%             0.35
50%             0.70
75%             1.04
max             3.48
       goat_akg
count     46.00
mean       0.67
```

```
std        0.47
min        0.12
25%        0.43
50%        0.50
75%        1.00
max        3.00
       chicken_akg
count        52.00
mean          2.48
std           1.46
min           0.43
25%           2.00
50%           2.00
75%           2.46
max           9.83
       otherpoultry_akg
count              9.00
mean               3.06
std                1.28
min                2.00
25%                2.00
50%                2.00
75%                4.00
max                4.75
       smockedfish_akg
count           191.00
mean              0.70
std               0.52
min               0.27
25%               0.33
50%               0.67
75%               1.00
max               4.00
       mango_akg
count       1.00
mean        0.20
std          nan
min         0.20
25%         0.20
50%         0.20
75%         0.20
max         0.20
       banana_akg
count      119.00
mean         2.12
std          2.02
min          0.17
25%          1.14
50%          1.14
75%          2.29
max         12.00
       guava_akg
count      89.00
mean        2.12
std         3.25
min         0.09
25%         0.34
50%         0.50
75%         3.14
max        12.00
       wildfruits_akg
count           60.00
mean             0.97
std              1.07
min              0.21
25%              0.50
50%              0.50
75%              0.56
max              4.00
```

```
       sugar_akg
count     202.00
mean        0.48
std         0.39
min         0.02
25%         0.18
50%         0.37
75%         0.50
max         2.50
       sugarcane_akg
count         171.00
mean            4.83
std             3.89
min             0.24
25%             2.00
50%             4.00
75%             6.00
max            20.00
       cookingoil_akg
count          261.00
mean             0.33
std              0.20
min              0.07
25%              0.20
50%              0.33
75%              0.40
max              2.00
       softdrinks_akg
count           24.00
mean             0.50
std              0.27
min              0.15
25%              0.33
50%              0.50
75%              0.59
max              1.00
       thobwa_akg
count      154.00
mean         3.79
std          4.28
min          0.18
25%          0.55
50%          2.03
75%          5.00
max         15.00
       locallybrewed_akg
count               1.00
mean                0.35
std                  nan
min                 0.35
25%                 0.35
50%                 0.35
75%                 0.35
max                 0.35
       salt_akg
count    284.00
mean       0.24
std        0.21
min        0.06
25%        0.11
50%        0.22
75%        0.33
max        3.00
       fingermillet_akg
count             10.00
mean               1.47
std                1.83
min                0.11
25%                0.26
```

```
50%               0.53
75%               2.12
max               5.00
       mandazidou_akg
count           94.00
mean             1.21
std              2.26
min              0.06
25%              0.12
50%              0.24
75%              0.61
max             10.00
================================================================
==== Summary Food Consumption last 7 days in kgs aggregated across items =======
================================================================
       total_foodkg  total_foodkg2  purchased_kg  ownproduced_kg
count        284.00         284.00        284.00          284.00
mean          36.59          35.33         17.29           18.04
std           16.00          18.98         11.36           17.01
min            6.71           0.00          0.00            0.00
25%           25.01          20.88          8.55            5.01
50%           34.79          31.96         14.72           13.03
75%           45.20          46.18         24.93           25.40
max           94.33         108.53         60.59           92.04
Foodkg is reported total food consumption. foodkg2 is the sum of purchases and own p
roduced. Interestingly the tewo distributions look quite similar. Though notice that
(1) should includes transfers while (2) not. There are also more outliers in (2)
potential to-do: compute purchases+own_produced+transfers.

================================================================
Check: Total kg vs Bought+own-produced kg.(All food items together)
================================================================
Reported c-buying more kg than total kg consumption
Empty DataFrame
Columns: [hhid, total_foodkg, purchased_kg]
Index: []
Reported c-ownproducing kg more kg than total kg consumption
     hhid  total_foodkg  ownproduced_kg
5    1008         29.88           33.05
6    1009         22.85           26.03
9    1012         50.15           92.04
28   1032         32.94           46.50
55   1115         52.13           54.85
73   1140         45.75           61.97
114  1239         29.16           60.06
163  1350         52.20           60.76
226  1515         48.46           55.68
227  1516         33.98           45.67
237  1529         49.86           61.31
Seems own-produced consumption wasnt clear, many larger than total consumption. Or u
nits are different
Median Price 1 kg of maizemgaiwa
500.0
Median Price 1 kg of maizerefined
375.0
Median Price 1 kg of maizemadeya
349.20636916099835
Median Price 1 kg of maizegrain
707.0707042138586
Median Price 1 kg of greenmaize
124.22802629964283
Median Price 1 kg of rice
1519.9999809039916
Median Price 1 kg of cassavatubers
317.2991395704025
Median Price 1 kg of wsweetpotatoes
395.6635277360149
Median Price 1 kg of osweetpotatoes
429.96879028539024
```

```
Median Price 1 kg of ipotatoes
844.7872349112216
Median Price 1 kg of potatocrisps
2348.9362401810913
Median Price 1 kg of bbean
1390.0000296700018
Median Price 1 kg of pigeonpea
574.9999906249983
Median Price 1 kg of groundnut
1000.0
Median Price 1 kg of groundnutf
2000.0
Median Price 1 kg of onion
1232.4930372462788
Median Price 1 kg of cabbage
200.0
Median Price 1 kg of tanaposi
431.2410137458501
Median Price 1 kg of leafyvegetables
693.2408531548839
Median Price 1 kg of tomato
227.63989490230415
Median Price 1 kg of eggs
500.0
Median Price 1 kg of driedfish
1437.4850061329628
Median Price 1 kg of fleshfish
1437.4850061329628
Median Price 1 kg of goat
4000.0
Median Price 1 kg of chicken
2000.0
Median Price 1 kg of otherpoultry
nan
Median Price 1 kg of smockedfish
1501.5014834654428
Median Price 1 kg of mango
491.85089146744554
Median Price 1 kg of banana
253.77275495702673
Median Price 1 kg of guava
390.40715433290865
Median Price 1 kg of wildfruits
75.0
Median Price 1 kg of sugar
1142.8571297959202
Median Price 1 kg of sugarcane
86.6497439716693
Median Price 1 kg of cookingoil
1499.9999475000066
Median Price 1 kg of softdrinks
1428.571428571424
Median Price 1 kg of thobwa
200.0
Median Price 1 kg of locallybrewed
2857.142857142848
Median Price 1 kg of salt
909.0908264462838
Median Price 1 kg of fingermillet
675.2851711026647
Median Price 1 kg of mandazidou
1651.9823606609839
median price of eggs is very cheap. Greenmaize, wildfruits, sugarcane, thobwa, also
very cheap. Beans expensive
 Comparison median consumption prices (per kg) in the villlage: 2022 vs 2023 =======
========
                good   p_c_22   p_c_23
0       maizemgaiwa   340.00   500.00
1      maizerefined   200.00   375.00
```

```
2       maizemadeya   104.76   349.21
3        maizegrain   480.81   707.07
4        greenmaize   296.91   124.23
5              rice 1,440.00 1,520.00
6     cassavatubers   158.65   317.30
7    wsweetpotatoes   237.40   395.66
8    osweetpotatoes   257.98   429.97
9         ipotatoes   450.00   844.79
10     potatocrisps 1,174.47 2,348.94
11            bbean 1,428.57 1,390.00
12        pigeonpea   500.00   575.00
13        groundnut 1,000.00 1,000.00
14       groundnutf 1,500.00 2,000.00
15            onion   616.25 1,232.49
16          cabbage   204.87   200.00
17         tanaposi   215.62   431.24
18  leafyvegetables   646.62   693.24
19           tomato   227.64   227.64
20             eggs 2,507.74   500.00
21        driedfish   862.49 1,437.49
22        fleshfish   790.62 1,437.49
23             goat 2,800.00 4,000.00
24          chicken 1,500.00 2,000.00
25     otherpoultry 1,500.00 2,000.00
26      smockedfish   900.90 1,501.50
27            mango   390.41   491.85
28           banana   118.43   253.77
29            guava   390.41   390.41
30       wildfruits    33.36    75.00
31            sugar 1,142.86 1,142.86
32        sugarcane    86.65    86.65
33       cookingoil 1,500.00 1,500.00
34       softdrinks 1,272.73 1,428.57
35           thobwa   282.83   200.00
36    locallybrewed 2,000.00 2,857.14
37             salt   909.09   909.09
38     fingermillet 1,000.00   675.29
39       mandazidou 1,651.98 1,651.98
corrected prices of eggs and greenmaize
============================================================
==== Summary Food Consumption 7 days in $ =======
============================================================
       c_food  c_food_purch  c_food_ownprod
count  284.00        283.00          276.00
mean    21.10         11.36            8.99
std     12.66          8.88           10.70
min      4.40          0.10            0.03
5%       7.22          2.03            0.64
10%      8.10          2.48            0.92
25%     12.25          5.09            2.47
50%     17.82          8.81            6.01
75%     27.46         15.02           11.13
80%     29.47         17.21           13.04
90%     39.16         25.09           19.43
95%     45.41         29.45           29.77
99%     63.17         38.47           55.88
max     75.71         56.91           76.12
============================================================
 SUMMARY  NON-FOOD CONSUMPTION (3 MONTH LEVEL)
============================================================
summary in MWK
         c_nonfood  c_housing  c_clothes  c_education   c_health  \
count       284.00     284.00     284.00       284.00     284.00
mean     73,172.22  47,571.34  13,169.72     7,424.12   4,561.62
std     109,966.92  62,099.06  30,284.56    42,991.52   9,845.05
min       1,500.00       0.00       0.00         0.00       0.00
25%      24,000.00  15,000.00       0.00         0.00       0.00
50%      45,400.00  30,000.00   4,300.00     1,300.00   2,000.00
75%      88,825.00  60,000.00  16,125.00     4,600.00   5,000.00
```

```
max   1,226,300.00 750,000.00 400,000.00   670,000.00 100,000.00

       c_funeralout  c_funeralin  c_weddingout  c_weddingin
count        284.00       284.00        284.00       284.00
mean         194.37       146.13         55.63        49.30
std          746.42     2,210.79        338.68       615.78
min            0.00         0.00          0.00         0.00
25%            0.00         0.00          0.00         0.00
50%            0.00         0.00          0.00         0.00
75%            0.00         0.00          0.00         0.00
max        8,000.00    37,000.00      3,000.00    10,000.00
There are some potential outliers
Households above 500$ 3 months expenditure in non-food
hhid=1003 big expenditure. especially in education (600$) and clothes (400$). hhid=1
318 900$ non-food expend. 750$ in housing. hhid=1319 700$ non-food expend.100$ healt
h, 250$ educ, 240$ housing.
Extreme values not corrected. check if these are rich households
============================================================
Consumption Summary (1 year, in $)
============================================================
        ctotal   c_food  c_food_purch  c_food_ownprod  c_nonfood  c_housing  \
count   284.00   284.00        283.00          276.00     284.00     282.00
mean  1,291.22 1,012.99        545.34          431.71     278.22     182.16
std     831.19   607.88        426.41          513.53     418.13     236.46
min     258.51   210.98          4.56            1.52       5.70       5.70
5%      399.98   346.51         97.30           30.64      36.01      22.84
10%     466.60   388.91        119.16           44.14      56.77      34.22
25%     732.52   587.98        244.49          118.47      91.25      57.03
50%   1,094.49   855.31        422.96          288.48     172.62     114.07
75%   1,571.98 1,317.98        720.85          534.03     337.74     228.14
80%   1,722.19 1,414.78        826.20          625.72     387.45     267.38
90%   2,211.08 1,879.84      1,204.24          932.66     539.33     399.24
95%   2,812.42 2,179.53      1,413.79        1,428.92     659.30     569.83
99%   4,132.99 3,032.10      1,846.33        2,682.04   1,648.42     912.55
max   6,697.95 3,634.06      2,731.77        3,653.86   4,662.74   2,851.71

       c_clothes  c_education  c_health
count     194.00       163.00    203.00
mean       73.31        49.18     24.27
std       133.16       213.64     42.36
min         1.52         0.76      0.76
5%          4.94         3.08      1.52
10%         7.60         3.80      1.90
25%        15.21         7.60      5.70
50%        34.22        15.21     11.41
75%        94.11        30.99     26.62
80%       100.38        38.02     32.32
90%       152.09        71.48     47.76
95%       208.75       114.07     76.05
99%       432.43       549.81    226.31
max     1,520.91     2,547.53    380.23
total consumption
variance of the log ctotal   0.34
dtype: float64
Gini 0.3182992540996308
food consumption
variance of the log c_food   0.32
dtype: float64
Gini 0.314510757682836
================================================
final datasets saved in clean data/phase 3/Consumption/
 dataset 1:  cons_jul23_3months.csv (variables aggregated at 3 months level)
2.cons_jul23_months_year.csv (variables aggregated at year level)
================================================
datasets contain the following variables
Index(['hhid', 'c_food', 'c_food_purch', 'c_food_ownprod', 'c_nonfood',
       'c_housing', 'c_clothes', 'c_education', 'c_health', 'c_funeralout',
       'c_funeralin', 'c_weddingout', 'c_weddingin', 'ctotal'],
```

```
      dtype='object')
Monetary variables are in MWK unless mentioned othw
```

In [ ]: