

ASIA AND PACIFIC COMMISSION ON AGRICULTURAL STATISTICS

TWENTY-SEVENTH SESSION

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Agenda Item 6.2

Learning Experience of Trend Analysis of Estimating PoU Using SUSENAS Data

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INTRODUCTION

- PoU provides an overview of the prevalence of people who consume calories under minimum calorie needs for healthy and active life.
- PoU is different from Food Insecurity Rate. Food Insecurity Rate has a minimum consumption limit of certain calories. The minimum calorie requirement in PoU will be different for each person according to their age, gender and physical activity.
- Food Security Agency of MoA in cooperation with FAO and BPS has conducted two workshops related to the calculation of the PoU indicators.

INTRODUCTION

Workshop I (September 2016)

The PoU exercise using SUSENAS data March 2015 resulted an overestimate PoU (41%)

Workshop I (August 2017)

Focus on improving calculation method of calorie consumption estimation

Challenges in Estimating Calorie Consumption Based on SUSENAS

- Data collection of prepared food and beverage consumption in SUSENAS still uses non-standard units on some commodities, such as portions/glass/bowl. It is difficult to determine exact calorie conversion.
- Ex.: one portion of fried rice consumed has different sizes between regions, same-sized fried rice can be sold at different prices.
- Therefore, further exploration is required in determining the conversion of calorie for prepared food and beverage to obtain the amount of right calorie consumption.

Changes of SUSENAS Coverage 2011-2017

1

2011- 2014

229 food and 114 non-food (with purchased and gift column)

2

March 2015-March 2016

126 food and 122 non-food
(without purchased and gift
column)

3

September 2016-March 2017

236 Food and 122 non-food (with
purchased and gift column)

4

September 2017

188 food and 122 non food (with
purchased and gift column)

Procedure for calculating Consumption of Calorie Per Capita

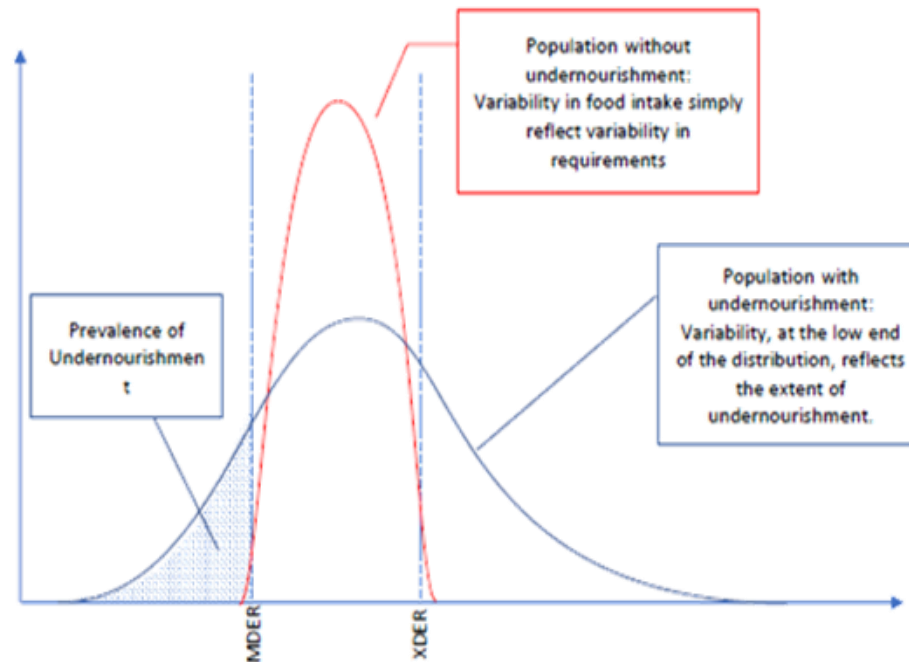
1. Calculate total consumption by commodity during the last 7 days for each household
 - Data used : household food consumption data and household member consumption for food and beverages consumed away from home as well as number of household member of each household
2. Calculate the number of nutrition consumed by commodity for each household
 - By multiplying the number of consumption of each commodity with nutrition conversion of each commodity
3. Calculate total consumption of household nutrition
 - Summation of calorie consumption of all commodities consumed by household → total household calorie consumption during a week

Procedure for calculating Consumption of Calorie Per Capita

4. Calculate calorie consumption per capita per day
 - By dividing total household calorie consumption during a week with total number of household member and then divided by 7 days
5. Calculate estimation of calorie consumption average per capita per day
 - Obtained by using share of population weight.

PoU Calculation

- According to FAO, undernourishment is “Condition of people who consume, on a regular basis, amounts of food that do not provide the dietary energy need to be healthy and active”
- Illustration of PoU



Data Supporting to Calculate PoU

- Data on Population by age and gender (sex)
- Data on calorie consumption
 - Approached by using calorie consumption per capita data from SUSENAS
- Data on Income
 - Approached by using expenditure data from SUSENAS
- Data on height and weight
 - Approached by using median data on height and weight by age and sex from Ministry of Health

Stages of PoU Calculation

- Calculate the composition of population by age and gender.
- Calculate the consumption of calorie per capita.

Consumption of calorie per capita = total consumption of calorie of household divided by the household size.

- Calculate the Coefficient of Variation (CV) of Expenditure.

CV is calculated by dividing the standard deviation with average consumption of calorie per capita.

- Calculate MDER and its CV

Minimum Dietary Energy Requirement (MDER): minimum calorie requirement by person according to age, gender, and calculate the CV.

Stages of PoU Calculation

- Calculate Total CV

Total CV is calculated by summing the CV of its forming variables.

- PoU

Calculate PoU by comparing calorie consumption per capita with MDER

Exploration of food consumption data from SUSENAS: Conversion of calories uses the price per calorie unit

Step 1

Calculate the price per unit calories from foodstuffs by dividing the expenditure by the consumption of calories in each household.

```
egen hhno= group(R101 R102 R103 R104 R105 R107 R108)
drop if KLP==0 | KLP==223
gen fsource=kode<191
replace fsource=2 if fsource==0
keep if fsource==1
```

Step 2

The price per calorie unit used is the median of the price per calorie unit calculated at 5 levels according to province, residence and decile of expenditure by considering the adequacy of the sample at each level.

```
capture program drop cleaning
program define cleaning
    cap drop ct*
    cap drop mn*
    cap drop sd*
```

Exploration of food consumption data from SUSENAS: Conversion of calories uses the price per calorie unit

Step 3

Calculate the consumption of calories of each prepared food and beverage using the median price per calorie unit based on the result of Step 2.

```
use "C:\POU\STATA\2011\TW1\BLOK41_FULLL.dta", clear
egen hhno= group(R101 R102 R103 R104 R105 R107 R108)
joinby hhno using "C:\POU\STATA\2011\TW1\median uval.dta", unm(b)
```

Step 4

Correcting the outliers using the regression model.

```
set more off
gen texp = kapita*r301
gen lnexp = ln(texp)
gen lnexp2=lnexp^2
```

Calculation of MDER

Step 1

- Determine the composition of population by sex-age group on SUSENAS data.

Step 2

- Calculate the minimum energy requirements for each sex-age group based on mean of height and weight.

Step 3

- Calculate MDER based on result in Step 2 and add with calorie requirement for pregnant mother that is 2100 Kcal multiplied by birth rate.

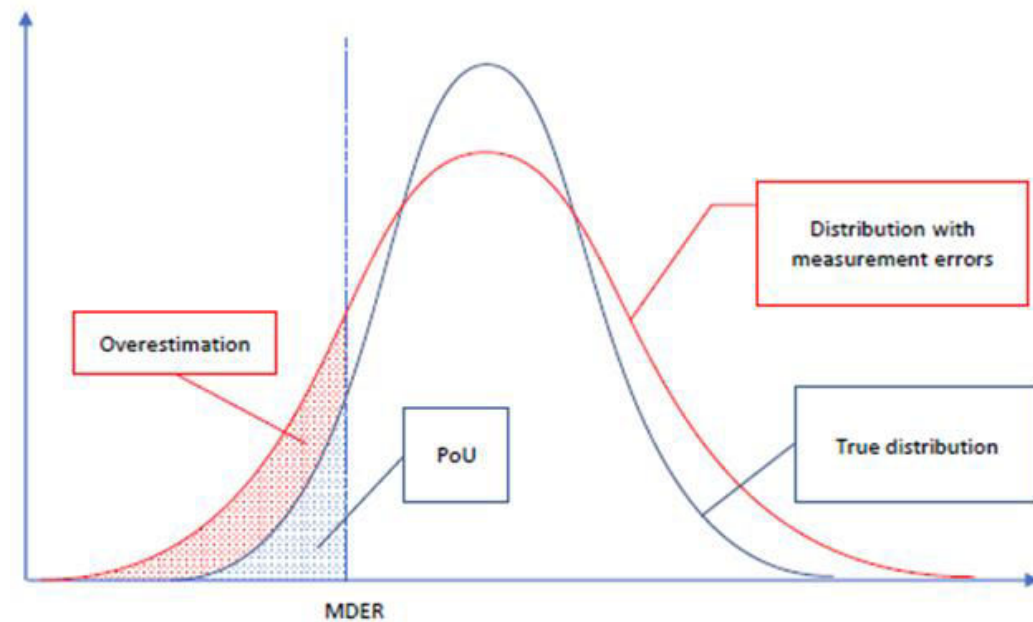
The MDER used in the PoU calculation is 1,796 Kcal (FAO reference).

Challenges in analysing food consumption data

- Data collection from food and beverages consumed away from home uses different units, such as portion, glass, cup, etc so that make difficulties to determine how weight in standard unit (gram or kg)
 - Even the same unit but different size from different region
 - Not mention commodities in detail
 - Difficult to convert calorie precisely
- There is different methodology from different years of SUSENAS
- The improvement (smoothing) of the calculation of calorie of prepared food based on calorie consumption and price of commodities consumed at home

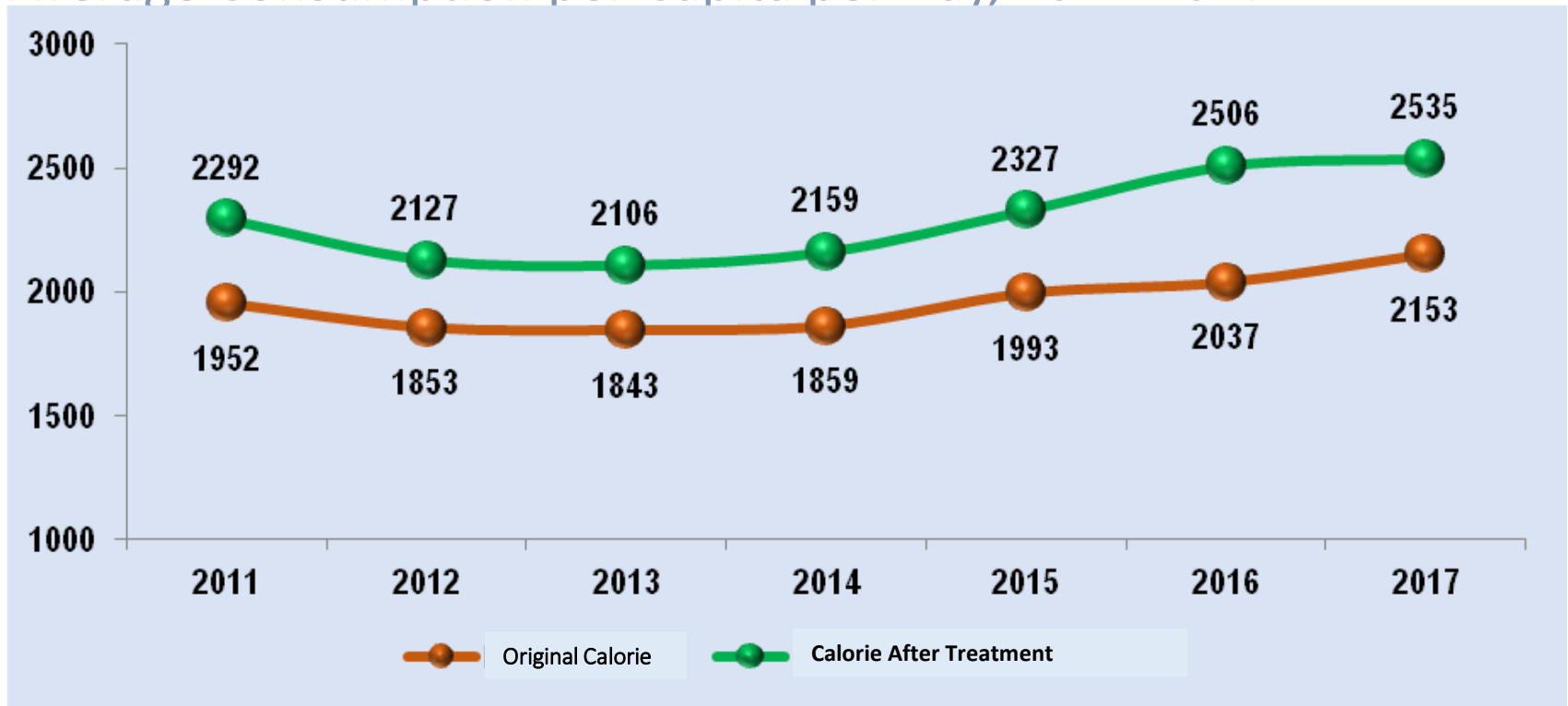
Result

- Before improvement of smoothing:
- The resulted PoU is 41% which is overestimate
- After smoothing is 7.8%
- Illustration of Overestimate



Trend Result (1)

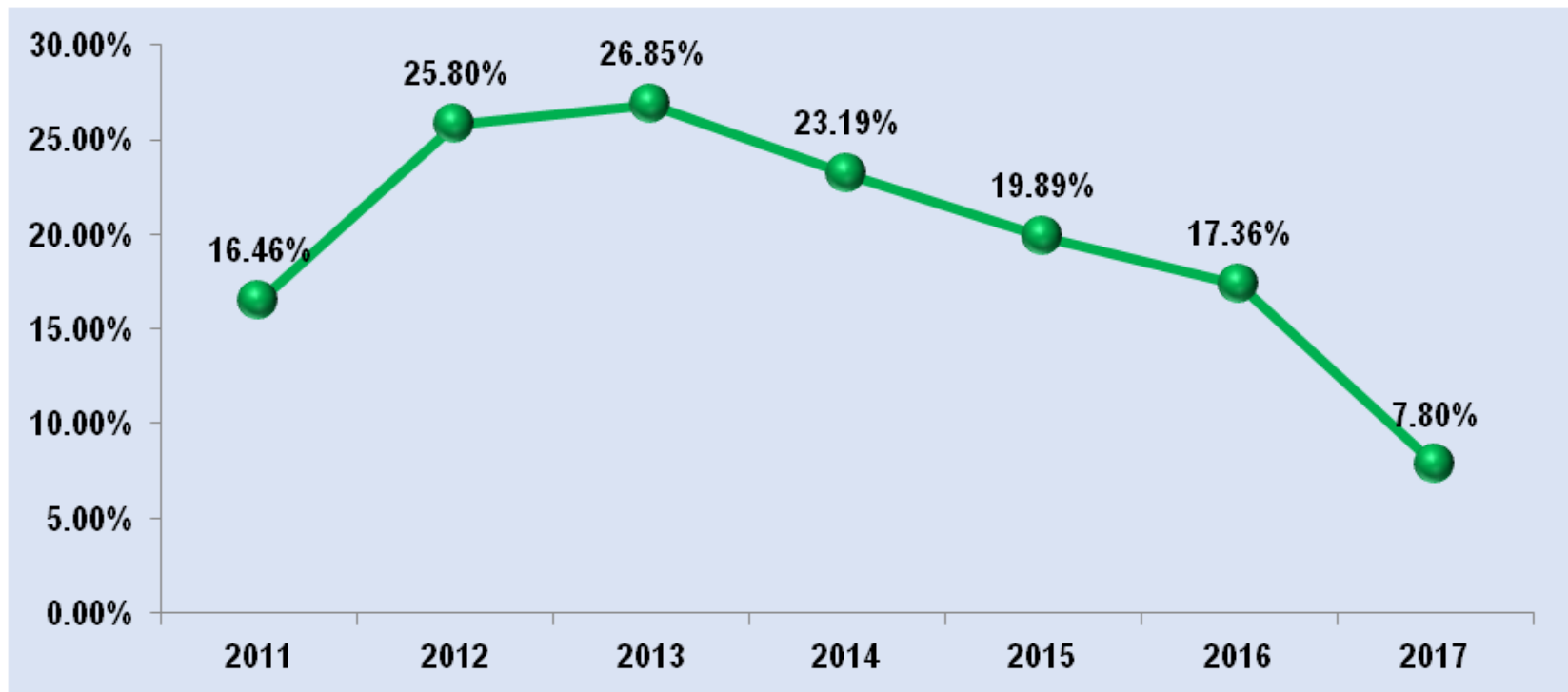
Average Consumption per Capita per Day, 2011-2017



Conversion of calorie using price per calorie unit results a higher average calorie consumption per capita per day

Trend Result (2)

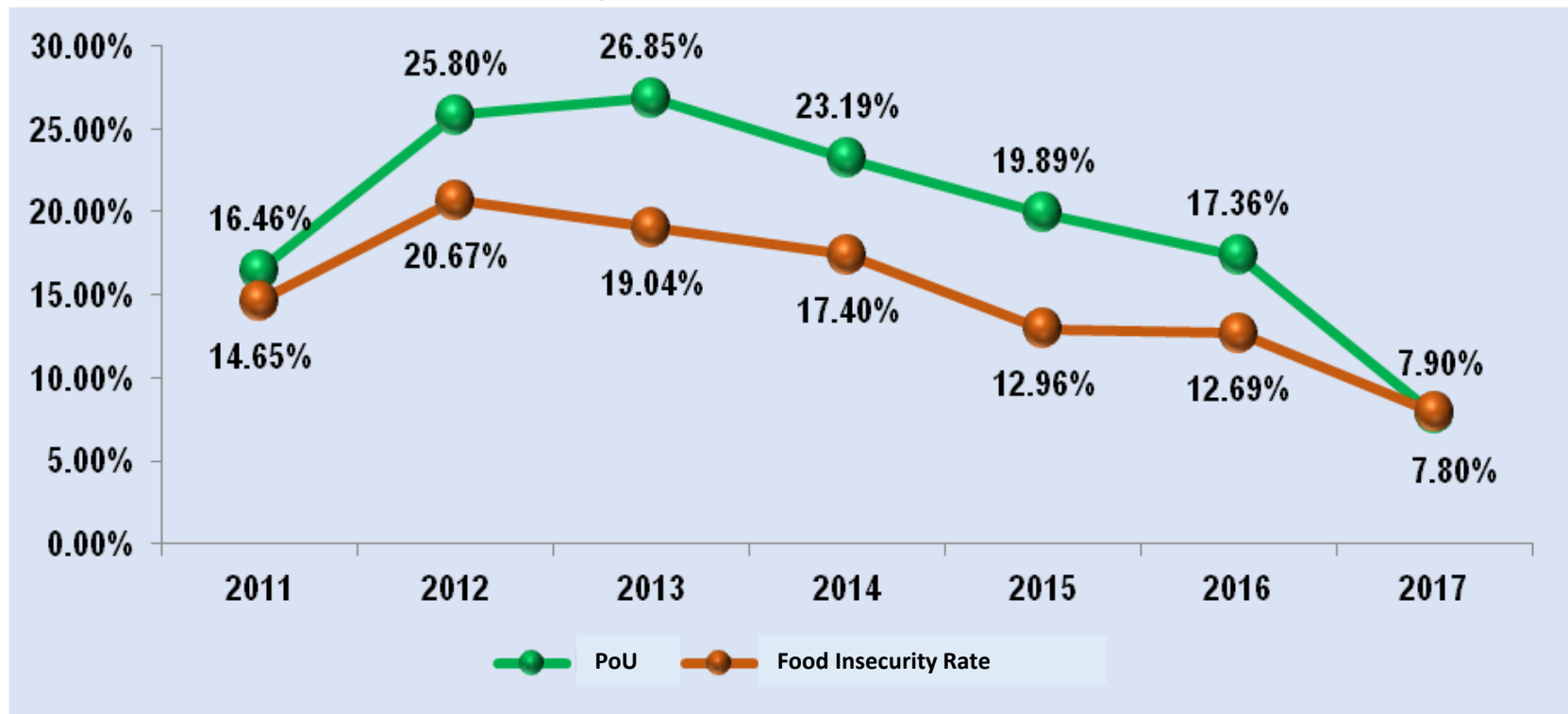
Prevalence of Undernourishment (PoU), 2011-2017



PoU 2017 = 7.8% means that 7.8 percent of Indonesian consume less calories than the minimum calorie requirement they need for healthy and active life.

Trend Result (3)

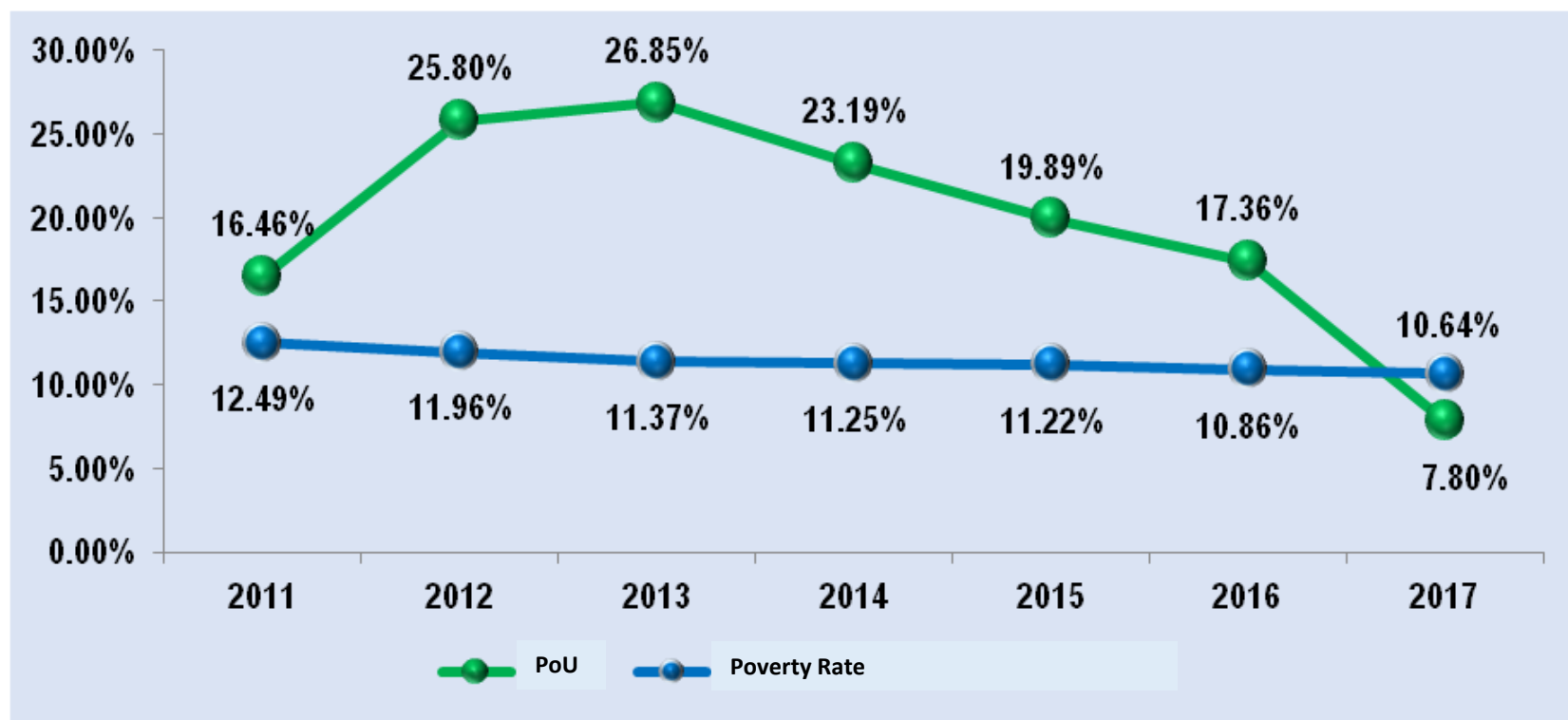
PoU and Food Insecurity Rate, 2011-2017



Note: Food Insecurity Rate is calculated from the proportion of population with consumption of calorie per capita less than 1,400 kcal.

Trend Result (4)

PoU and Poverty Rate, 2011-2017



Note: Poor are people with an average of monthly expenditure per capita less than the poverty line.

Dissemination

- These tentative results still need to be discussed further especially with the stakeholders to finalize before disseminating to public.

Thank you