**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 FAO, undernourishment is “Condition of people who consume, on 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 fsourse=kode<191
replace fsourse=2 if fsourse==0
keep if fsourse==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.

```stata
use "C:\POU\STATA\2011\TW1\BLOK41_FULL.dta", clear
gen hhno= group(R101 R102 R103 R104 R105 R107 R108)
joinby hhno using "C:\POU\STATA\2011\TW1\median uval.dta", unm(b)
set more off
gen texp = kapita*r301
gen lnexp = ln(texp)
gen lnexp2=lnexp^2
```

Step 4

Correcting the outliers using the regression model.

```stata
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.
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.

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Thank you