

Estimation of food loss related with consumption behavior in Japan

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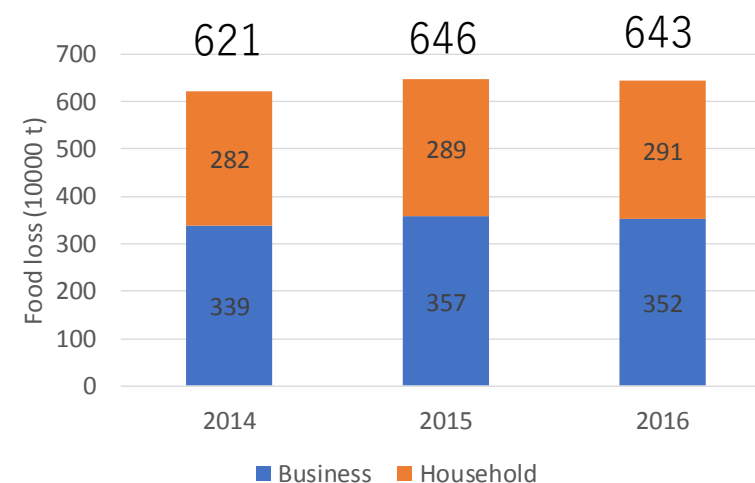
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Background

- “**Food loss**” issue is one of the issues that have attention in recent years in Japan.
- The Ministry of the Environment set a target to **reduce food loss by half in 2030** compared with 2000 in the 4th Fundamental Plan for the Establishing a Sound Material-Cycle Society.
- The government has published the amount of food loss generated over the last few years, but there is a problem whether the value is accurate.



How to know amount of food loss from household ?

- There are **2 way** to know food loss generation from household.
 - (1) **Food loss surveys** are conducted that the surveyed households measure and record the amount of food used and disposed of each time.
 - (2) The local government **conducts a composition survey of household waste** and grasps the amount of food loss by type of food loss.
- Problem
 - The burden of surveyed household/local government is large.
 - The survey period and the number of surveyed households/local government is limited.
- Due to the above-mentioned problems, it is difficult that sufficient survey has been conducted to ascertain the exact amount of food loss.

Objective of this research

Grasp the amount of food purchased from household consumption expenditure on food, and estimate the amount of food loss.

Estimation Target

Classification of food loss generation sector

Food manufacturing industry

Food wholesale

Food retailer

Restaurant industry

Excessive removal & direct disposal before food provision

Eating out

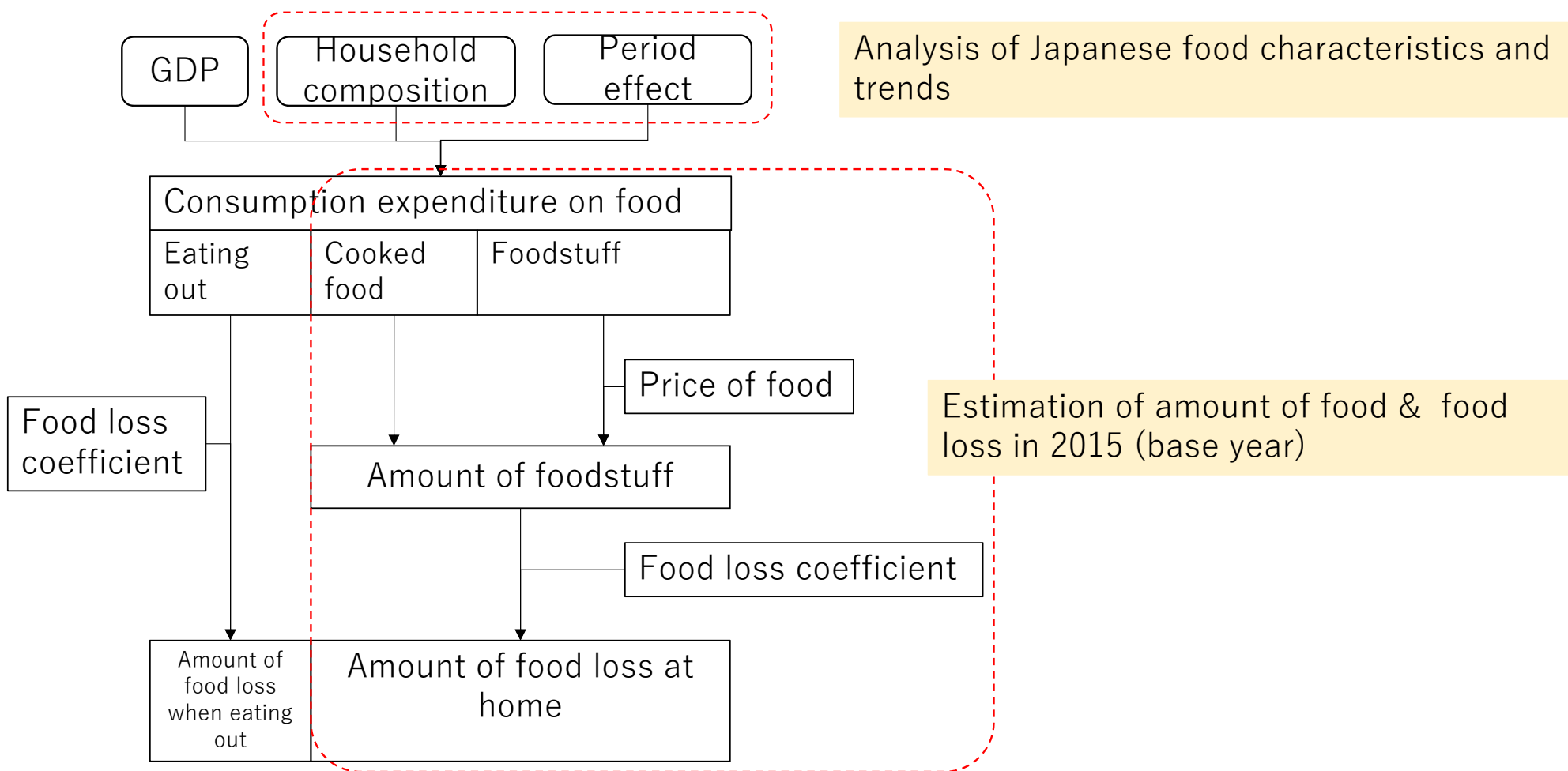
Leftovers by customers after food provision

Meals at home

- Excessive removal
- Direct disposal
- Leftovers

- ※Excessive removal...The parts where the skin of vegetables has been peeled too thick or removed.
- ※Direct disposal...Food that has expired and was discarded before cooking, such as by leaving it in the refrigerator.
- ※Leftovers...Food left over due to overproduction.

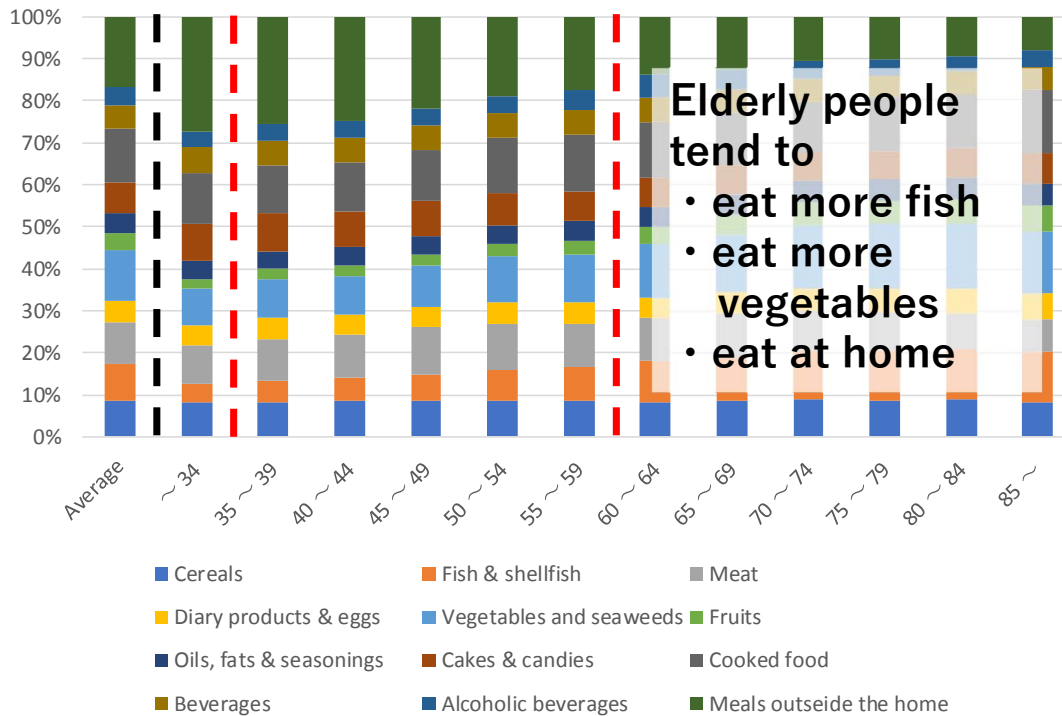
Estimation method



Analysis of Japanese food characteristics and trends

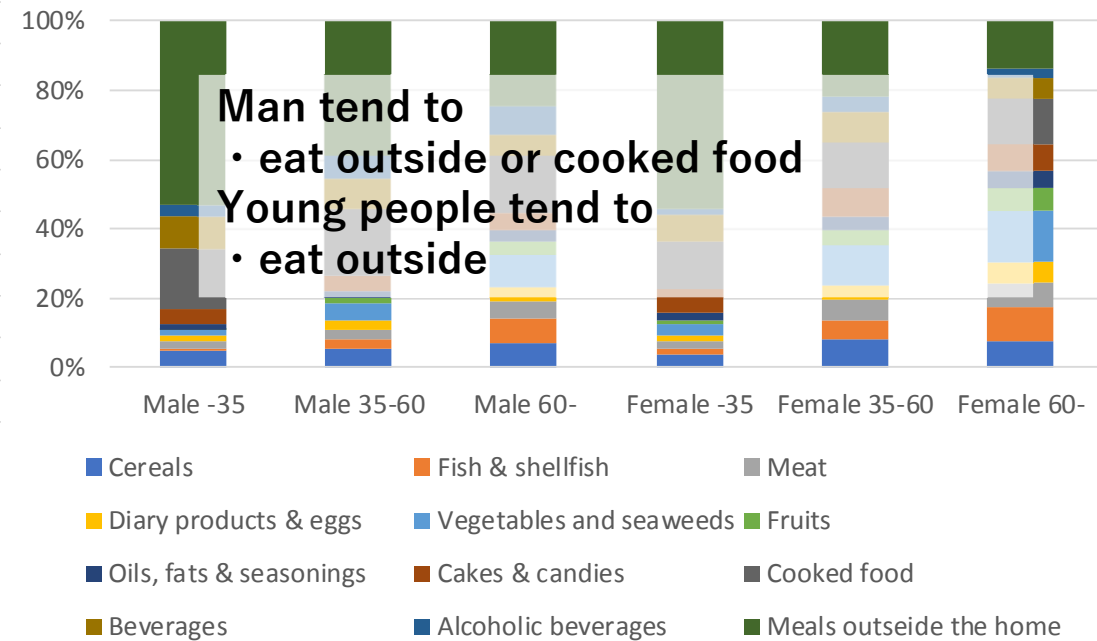
※ Two and more households

Table. Consumption expenditure on food by age of householder



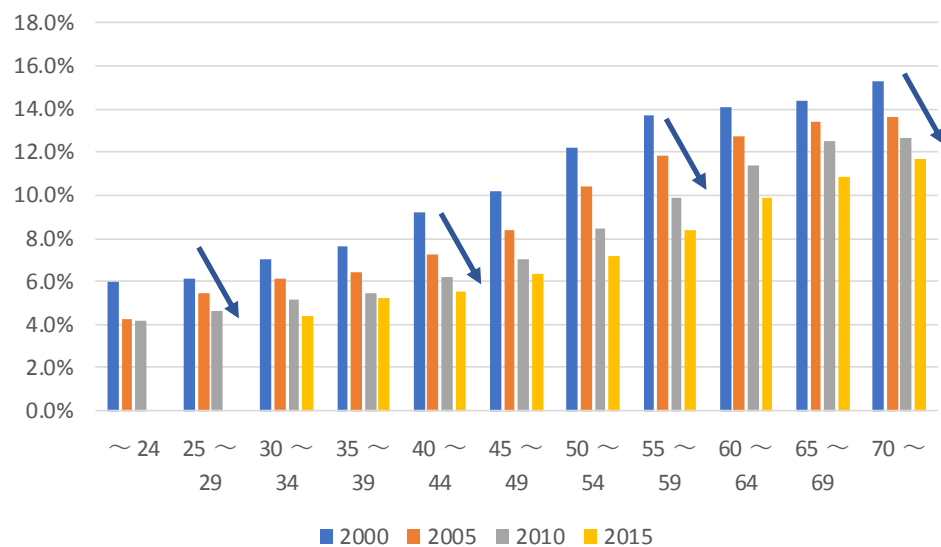
※ Single households

Table. Consumption expenditure on food by age of householder



Analysis of Japanese food characteristics and trends

※ Two and more households
Table. Consumption expenditure rate on fish & shellfish by age of householder



- ✓ At all ages, the proportion of fish consumed has decreased.
- ✓ Eating out is increasing from young to middle age, and the use of cooked food is increasing in the elderly.

Table. Consumption expenditure rate on cooked food by age of householder

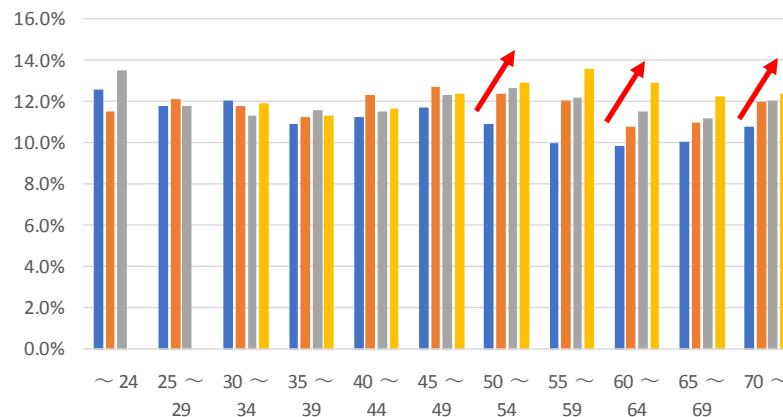
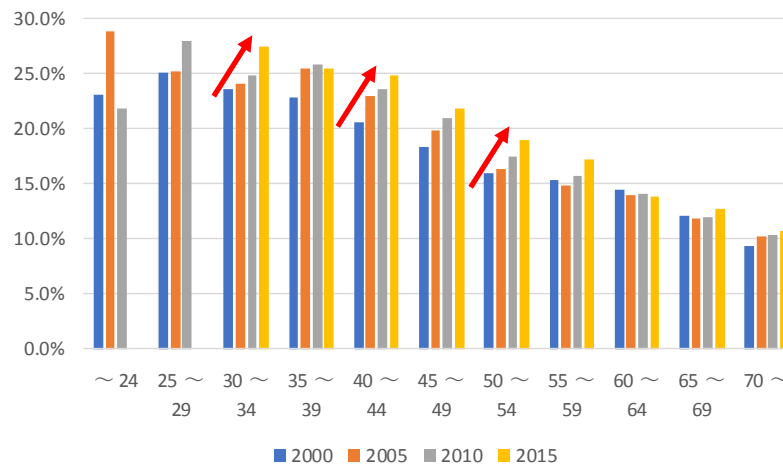


Table. Consumption expenditure rate on meals outside the home by age of householder



Estimation of purchased food and food loss

Purchased food (2015)

	Estimated value(E)	Statistic value(S)	E/S
Cereals	733	618	119%
Vegetables	826	1004	82%
Mushrooms	19	54	35%
Fruits	365	384	95%
Meat	138	250	55%
Eggs	103	111	92%
Mild and diary products	159	415	38%
Fish	171	121	142%
Sugar	18	17	102%
Fats and oils	39	45	86%
Seasonings	143	250	57%
Cooked food	1509	1055	143%
Confectionery	391	92	427%
Total	4613	4416	104%
Unit: 10000 t			

Estimate food loss

Food loss (2015)

Unit: 10000 t

	Excessive removal	Direct disposal	Leftovers	Total	
Cereals	14.7	5.1	7.3	27.1	14%
Vegetables	55.3	7.4	10.7	73.5	39%
Mushrooms	1.2	0.2	0.2	1.6	1%
Fruits	24.1	6.2	1.1	31.4	17%
Meat	1.2	0.4	1.4	3.0	2%
Eggs	0.8	0.2	0.9	2.0	1%
Milk and diary products	0.0	0.8	0.5	1.3	1%
Fish	4.5	0.5	5.0	9.9	5%
Sugar	0.0	0.1	0.3	0.4	0%
Fats and oils	0.0	0.0	0.1	0.1	0%
Seasonings	0.0	0.9	4.4	5.3	3%
Cooked food	0.0	10.6	16.6	27.2	14%
Confectionery	0.0	4.3	0.8	5.1	3%
Total	101.8	36.7	49.3	187.8	100%



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What is a reason of the gap?

✓ **The problem of food loss coefficient**

- The food loss coefficient used for the estimation is the result of a survey on the amount of food loss generated at home.
- Households that cooperate in surveys on the amount of food loss at home may be characterized by
 - (1) households interested in the food loss problem and
 - (2) living with a relatively small amount of food loss.

✓ **The problem of food loss statistics**

- Food loss generation statistics are calculated from values obtained from waste surveys.
- Due to the difficulty of conducting the survey, there are concerns such as
 - (1) the bias of the survey results due to the bias in the survey local government
 - (2) the moisture content of food loss changing when mixed with other garbage.

Future tasks

- Review of food loss coefficient
 - I request the Ministry of the Environment to disclose detailed information on a survey on food waste and food loss.
- Estimation of food loss generation by 2030
- Listing food loss reduction measures and quantifying their effects