Measuring household food waste

The Spain experience

THE HOUSEHOLD FOOD WASTE PANEL

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Content of the presentation

1. **FW prevention initiative: The Spanish Strategy "More food, less waste"**

2. **Monitoring system at the household level: The household food waste panel**

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   b. Main conclusions

   c. Information resulting from the household food waste panel

   d. Main food waste data at household level

   e. Latest data available

3. **Next steps**

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The Spanish Strategy "More food, less waste"

- It is the response of the Spanish Government to the **European Parliament resolution of January 2012**, urging Member States to address the problem of food losses and food waste along supply chain.

- **First implementation period (2013-2016):**

AREA 1: KNOWLEDGE GENERATION

AREA 2: GOOD PRACTICES AND AWARENESS

AREA 3: REGULATORY ASPECTS

AREA 4: COLLABORATING WITH OTHER AGENTS

AREA 5: NEW TECHNOLOGIES

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The Spanish Strategy "More food, less waste"

- **New implementation period (2017-2020):** efforts will focus those actions with more impact in the fight against FW → the areas of action will be expanded:

AREA 1: KNOWLEDGE GENERATION	**AREA 2: TRAINING AND AWARENESS**	**AREA 3: GOOD PRACTICES**
AREA 4: COLLABORATING WITH OTHER AGENTS	**AREA 5: SECTORAL AGREEMENTS**	**AREA 6: REGULATORY ASPECTS**
AREA 7: RESEARCH AND INNOVATION	**AREA 8: FOOD WASTE, ENVIRONMENT AND CLIMATE CHANGE**	

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The household food waste panel

➡️ Developing a specific food waste monitoring method at household level:
THE HOUSEHOLD FOOD WASTE PANEL

PURPOSE: quantify the household FW

What do we do? …

- Quantify any food or drink that is thrown away / discarded via the sewer by deterioration, as it was bought without any elaboration or preparation by the consumer, &

- Quantify any food cooked by the consumer and discarded (that is, portions of the recipes thrown away / discarded via the sewer because are left in the plate / pot or are stored time in the fridge / freezer)

How do we do it? …

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The household food waste panel: METHODOLOGICAL NOTES

In order to monitoring food waste at household level, we start from both purchase panel and usage panel

Purchase panel
We know what is in the pantry → We know ***the products that can be discarded***

Usage panel
We know what recipes are cooked at home each day of the week → We know ***the recipes that can be discarded***

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12.500 households

Daily **scanner** of home purchases

The whole food and drink purchased daily by Spanish households for home consumption

3.000 questionnaires

...naires of ...ion, spread ... of the year

... drink, ...iduals, ...nd taken ...tside

We know
⇩
What is in the pantry

4.000 ...

Online qu...
away, with co...
household
The whole food waste g...
households

...ow
⇩

...*recipes are cooked at home each day of the week*

REMEMBER!
It makes possible to know what is in the pantry → We know *the products that can be discarded*

We ask
⇩
What products have been wasted in the way they were bought, &
What part of the recipes cooked along the week have been wasted, directly from the dish, from the pot or from the fridge / freezer

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The household food waste panel: METHODOLOGICAL NOTES

PURCHASE PANEL

It is implemented since **1987**

Purpose
Continuous and constant monitoring of the daily purchases of food and drink carried out by Spanish households for home consumption

Methodology
Universe: All households in Spain (except Ceuta & Melilla) → 18.326.032 households in 2016
Sample: 12.500 households → representative of Spanish households; permanent and constant over time
Information collection system: The sample reports, through a **scanner**, of the **whole food and drink purchased daily** for home consumption → **How reports? …**

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The household food waste panel: METHODOLOGICAL NOTES

PURCHASE PANEL

All household members report. *Children under adult supervision*

Sequence of questions to complete for each purchase:

Household person to be reported
Each household member has its own code

Day of purchase

Place of purchase

Total cost of the purchase ticket
Use or not of loyalty card (only for those establishments that have it)

Purchased products → *For each product reported → → →*

End of purchase

Prod con EAN

No EAN

Libro de códigos manual

- ✓ Scan the **bar code** with the **scanner** *(products with bar code)* / Use the **code book** to select the proper code *(products without bar code)*

- ✓ Introduce the **purchased quantity of product** (units, grams, etc.)

- ✓ Introduce the **price paid for the product**

- ✓ Introduce if it has been **sale price / promotion**

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12.500 househ

4.000 households & 8.000 questionnaires

Daily **scanner** of
purchases

The whole f
purchased
household
consumpt

Online questionnaires of weekly consumption, spread over the 52 weeks of the year

The whole food and drink, days of the year, individuals, home consumption and taken from home to eat outside

REMEMBER!

It makes possible to know recipes are cooked at home each day of the week → We know *the recipes that can be discarded*

We know

⇓

What recipes are cooked at home each day of the week

What is i

What p.....*have been wasted in the way they were bought, &
What part of the recipes cooked along the week have been wasted, directly from the dish, from the pot or from the fridge / freezer*

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The household food waste panel: METHODOLOGICAL NOTES

USAGE PANEL

It is implemented since **2014**

Purpose
With the information provided by the purchase panel, monitoring of the recipes that households cooked each day of the week for home consumption and taken from home to eat outside

Methodology
Universe: All households in Spain (except Ceuta & Melilla & Canarias) → 17.506.877 households in 2016
Sample: 4.000 households of the purchase panel → representative of Spanish households; permanent and constant over time
Information collection system: The sample reports, through **online questionnaires of weekly consumption** spread over the 52 weeks of the year (8.000 questionnaires), of the **whole food and drink consumed at home and taken from home to eat outside** → How reports? …

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The household food waste panel: METHODOLOGICAL NOTES

USAGE PANEL

Sequence of questions to complete for each weekly consumption:

Household to be reported *(Each household reports the consumptions have been made by all household members)*

The day of consumption

Who consumes**;** Are there **guests;** What **kind of event** is *(celebration, familiar event, etc.)***; What time** does the majority eat**; How long** did it take to prepare the menu

Moment of consumption *(Breakfast, mid-morning, lunch, mid-afternoon, dinner, after dinner, taken from home to eat outside)*

Products consumed

The way of cooking *(Grilled, oven, boiled, fried, etc.)*

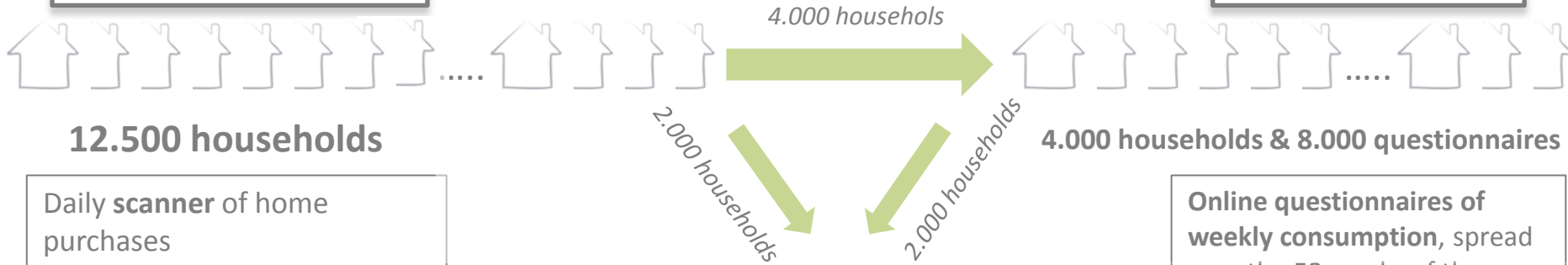**The reason for consumption** *(Health, pleasure, comfort, etc.)*

End of report

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PURCHASE PANEL

USAGE PANEL

4.000 households

2.000 households

2.000 households

12.500 households

Daily **scanner** of home purchases

The whole food and drink purchased daily by Spanish households for home consumption

4.000 households & 8.000 questionnaires

Online questionnaires of weekly consumption, spread over the 52 weeks of the year

The whole food and drink, days of the year, individuals, home consumption and taken from home to eat outside

FOOD WASTE PANEL

4.000 households & 8.000 questionnaires

Online questionnaires of products / recipes thrown away, with collaboration of two weeks / semester / household
The whole food waste generated by Spanish households

We know

What is in the pantry

We know

What recipes are cooked at home each day of the week

We ask

What products have been wasted in the way they were bought, &
What part of the recipes cooked along the week have been wasted, directly from the dish, from the pot or from the fridge / freezer

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The household food waste panel: METHODOLOGICAL NOTES

FOOD WASTE PANEL

It is implemented since **2014**

Purpose
With the information provided by the purchase panel and usage panel, monitoring of the whole household food waste

Methodology
Universe: All households in Spain (except Ceuta & Melilla & Canarias) → 17.506.877 households in 2016
Sample: 4.000 households (2.000 hh of purchase panel & 2.000 hh of usage panel) → representative of Spanish households; permanent and constant over time

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The household food waste panel: METHODOLOGICAL NOTES

FOOD WASTE PANEL

Information collection system:

2.000 hh of purchase panel report, through **online questionnaires,** of any product (food and drink) that has been wasted in the way it was bought (without any elaboration or preparation by the consumer)

2.000 hh of usage panel report, through **online questionnaires**, of any recipes cooked along the week that has been wasted, directly from the dish, from the pot or from the fridge / freezer

In both cases, **two weeks to the semester of collection per household** will be required (8.000 questionnaires) → **How reports? …**

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The household food waste panel: METHODOLOGICAL NOTES

FOOD WASTE PANEL

2.000 hh of purchase panel

Each one completes its online custom questionnaire
(*Average time to complete = 10'*)

Sequence of questions to complete product by product:

Household to be reported *(Each household reports the products have been wasted by all household members)*

When the product has been wasted

Unit of measure of the wasted product (Different units of measure according to the selected product)

How much of the product has been wasted

End of report

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The household food waste panel: METHODOLOGICAL NOTES

FOOD WASTE PANEL

2.000 hh of usage panel

Each one completes its online custom questionnaire
(*Average time to complete = 3'*)

Sequence of questions to complete recipe by recipe:

Household to be reported *(Each household reports the recipes have been wasted by all household members)*

When the recipe has been wasted

How much portion of the recipe has been wasted

From where the recipe has been wasted: dish, pot or fridge / freezer

End of report

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PURCHASE PANEL

USAGE PANEL

4.000 households

12.500 households

2.000 households

2.000 households

4.000 households & 8.000 questionnaires

Daily **scanner** of home purchases

The whole food and drink purchased daily by Spanish households for home consumption

Online questionnaires of weekly consumption, spread over the 52 weeks of the year

The whole food and drink, days of the year, individuals, home consumption and taken from home to eat outside

FOOD WASTE PANEL

4.000 households & 8.000 questionnaires

Online questionnaires of products / recipes thrown away, with collaboration of two weeks / semester / household

The whole food waste generated by Spanish households

We know

What is in the pantry

We know

What recipes are cooked at home each day of the week

We ask

What products have been wasted in the way they were bought, &
What part of the recipes cooked along the week have been wasted, directly from the dish, from the pot or from the fridge / freezer

We can quantify the whole household food waste

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The household food waste panel: MAIN CONCLUSIONS

% of HHFW destinations covered	100%
Complexity	Medium
Number of households	4.000 hh & 8.000 questionnaires (representative of Spanish hh; permanent & constant over time)
Sampling error	1,5% (at the 95 % confidence level)
Frequency of reporting data	Biannual (October to March & April to September) Annual (October to September)
Time to complete the biannual data / annual data	5 weeks from the end of the study period / 8 weeks from the end of the study period

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The household food waste panel: MAIN CONCLUSIONS

Outputs	Detailed data (wasted products, wasted recipes) link to sociodemographic information on household (regions, age of the housewife, presence of children in the home, socioeconomic level, and life cycles)
Main advantages	Can cover all food and drink wasted at household level Provides detailed and valuable information on which to design effective interventions to prevent food waste at household level Is based on previously existing instruments (purchase panel of the MAPAMA implemented since 1987 & usage panel of the MAPAMA implemented since 2014). This allows an optimization in the use of resources

The household food waste panel: MAIN CONCLUSIONS

Other advantages	Sample households have wide experience in panel participation
	Questionnaires are designed to allow sample households to complete them quickly
	The possibilities of response are adapted to the reality of the household: custom questionnaires include of the products that this same household has bought and the recipes that this same household has cooked
	It also allows sample households to quantify waste in different units of measure according to the selected product

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The household food waste panel: RESULTING INFORMATION

PRODUCTS HAVE BEEN WASTED IN THE WAY THEY WERE BOUGHT

Detail of categories of products →

Amount of food waste (in units)

Absolute volume of waste (in kg), applying a weight per portion

Absolute cost of waste (in €), applying an estimation

Ratio between percentage wasted / percentage purchased, with actual purchases from the purchase panel (% wasted vs bought)

- FRESH CHICKEN MEAT
- FRESH PORK MEAT
- FRESH BEEF MEAT
- OTHER FRESH MEATS
- HAM BOILED (YORK HAM)
- OTHERS COLD CUTS
- EGGS
- LIQUID MILK
- MARGARINE / BUTTER
- PASTRY FOR COOKING
- ORANGES
- BANANAS
- APPLES
- OTHER FRESH FRUITS
- CREAM OF MILK
- FRESH PASTA
- READY MEALS
- FRESH CHEESE
- CURED CHEESE/ SEMI/SOFT/OTHERS
- GRATED CHEESE
- BANGER
- FRESH SAUSAGES
- FRESH FISH /

- SEAFOOD
- YOGURT
- DAIRY DESSERTS (CUSTARD, CRÈME CARAMEL, JUNKET, etc.)
- FERMENTED MILK
- BOILED VEGETABLES
- FRESH VEGETABLES AND VEGETABLES
- PIZZA
- CAKES
- FROZEN CHICKEN MEAT
- FROZEN PORK MEAT
- FROZEN BEEF MEAT
- OTHER FROZEN MEATS
- FROZEN FISH / SEAFOOD
- FROZEN VEGETABLES AND VEGETABLES
- ICE CREAMS
- FRESH BREAD
- INDUSTRIAL PAN
- CANNED SAUSAGES
- LEGUME
- LIQUID CREAM AND

- SOUP
- SOFT DRINKS
- MILKSHAKE
- SPARKLING WINES
- WINES
- JUICES AND NECTARS
- CANNED VEGETABLE
- CANNED FISH
- CANNED FRUIT
- HONEY
- OIL
- RICE
- CEREALS
- CHOCOLATES
- BISCUITS
- PASTA
- OLIVES AND PICKLES
- ROASTED COFFEE
- SOLUBLE COFFEE
- CONDIMENT
- TEA
- BAKERY
- CHIPS
- SOUCES
- TURRON AND OTHER CHRISTMAS PRODUCTS
- DRY FRUITS

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The household food waste panel: RESULTING INFORMATION

PART OF THE RECIPES COOKED ALONG THE WEEK HAVE BEEN WASTED

Detail of categories of recipes cooked

Amount of food waste (in units)

Absolute volume of waste (in kg), applying a weight per portion

- TOTAL PIZZAS DISH
- TOTAL SALADS
- TOTAL SOUPS
- TOTAL CREAMS
- TOTAL PURÉE
- TOTAL CONSOMME
- TOTAL GAZPACHO AND SALMOREJO
- TOTAL STEW
- MEAT DISH
- FISH DISH
- SEAFOOD
- VEGETABLE
- LEGUME DISH
- PASTA DISH
- POTATO DISH
- EGG DISH
- FLOUR DISH
- RICE DISH
- CHARCOATS / BANGER DISHES
- ETHNIC DISHES
- BABY FOOD
- SANDWICH

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The household food waste panel: RESULTING INFORMATION

IN BOTH CASES
The segmentation of the information is made according to the following **sociodemographic criteria**

Regions

- ✓ Total Spain
- ✓ Metropolitan Barcelona
- ✓ Catalan – Aragonese Rest
- ✓ Levante
- ✓ Andalusia
- ✓ Metropolitan Madrid
- ✓ The rest center
- ✓ The north center
- ✓ The north west

Age of the housewife

- ✓ Less than 35 years old
- ✓ 35 to 49 years
- ✓ 50 to 64 years
- ✓ 65 and over

Presence of children in the home

- ✓ No children
- ✓ With children under 6 years
- ✓ With children from 6 to 15 years old

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The household food waste panel: RESULTING INFORMATION

IN BOTH CASES
The segmentation of the information is made according to the following **sociodemographic criteria**

Socioeconomic level

- ✓ Upper and upper middle level
- ✓ Middle level
- ✓ Low middle level
- ✓ Lower level

Life cycles

- ✓ Independent young people
- ✓ Young couples without children
- ✓ Couples with small children
- ✓ Couples with children middle age
- ✓ Couples with older children
- ✓ Single-parent households
- ✓ Adult couples without children
- ✓ Independent adults
- ✓ Retired

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The household food waste panel: MAIN FW DATA AT HH LEVEL

	TOTAL FOOD WASTE AT HOUSEHOLD LEVEL		
	From October 2014 to September 2015	**From October 2015 to September 2016**	**Variation**
Total million kg / year	1.325,9	1.245,8	- 80,1 (▼6 %)
Total million kg / week	25,5	24	-1,5 (▼6 %)
Kg / household / year	75,8	71,2	-4,6 (▼6 %)
Wasted vs bought (%)	4,53	4,3	▼0,2

Oct15 to Sep16 vs Oct 14 to Sep 15
Total million kg / year: ▼6 % (-80,1 million kg / year)

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The household food waste panel: MAIN FW DATA AT HH LEVEL

	TOTAL PRODUCTS HAVE BEEN WASTED IN THE WAY THEY WERE BOUGHT							
	From October 2014 to September 2015				From October 2015 to September 2016			
Product	Total million kg / year	Kg / household / year	Total million € / year (*)	Wasted vs bought (%)	Total million kg / year	Kg / household / year	Total million € / year (*)	Wasted vs bought (%)
Meat	26,22	1,50	192,96	1,5	24,60	1,40	157,10	1,1
Fish	28,85	1,65	207,97	2,5	23,86	1,36	188,42	2,1
Dairy products	144,60	8,26	377,48	2,9	134,10	7,66	223,37	2,7
Fruits	315,74	18,04	395,75	7	345,26	19,72	498,06	7,7
Vegetables	184,49	10,54	308,82	4,4	168,77	9,64	252,81	4,1
Bread	66,44	3,80	157,91	4,2	66,27	3,79	158,52	4,3
Creams & purees	46,24	2,64	61,25	22,4	40,11	2,29	54,77	18,9
Drink	53,37	4,71	157,72	4,8	72,03	4,11	155,87	3,8
TOTAL	1.134,60	64,83	3.083,85	3,9	1.066,03	60,89	2.642,37	3,7

Oct15 to Sep16: Products wasted → 85,6% TFW
Oct15 to Sep16 vs Oct 14 to Sep 15: Total million kg / year: ▼6 %
(-68,6 million kg / year)

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www.menosdesperdicio.es   (*) *Estimation*

The household food waste panel: MAIN FW DATA AT HH LEVEL

Recipie	TOTAL RECIPES COOKED HAVE BEEN WASTED			
	From October 2014 to September 2015		From October 2015 to September 2016	
	Total million kg / year	Kg / household / year	Total million kg / year	Kg / household / year
Salads	16,12	0,92	11,33	0,65
Meat dishes	22,51	1,29	24,34	1,39
Rice dishes	18,12	1,04	15,27	0,87
Pasta	19	1,09	17,14	0,98
Creams & purees	24,11	1,38	23,40	1,34
Leguminous dishes	37,37	2,14	35,72	2,04
TOTAL	**191,34**	**10,94**	**179,83**	**10,27**

Oct15 to Sep16: Recipies wasted → 14,4% TFW
Oct15 to Sep16 vs Oct 14 to Sep 15: Total million kg / year: ▼ 6 %
(-11,5 million kg / year)

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The household food waste panel: LATEST DATA AVAILABLE
From October 2016 to March 2017

	TOTAL FOOD WASTE AT HOUSEHOLD LEVEL		
	From October 2015 to March 2016	**From October 2016 to March 2017**	**Variation**
Total million kg / semester	618,41	669,25	+ 50,8 (▲8%)
Total million kg / week	23,79	25,74	+ 1,9 (▲8%)
Kg / household / semester	35,33	38,09	+ 2,8 (▲8%)
Wasted vs bought (%)	4,24	4,64	▲0,4

April 2016 to March 2017 vs April 2015 to March 2016
Total million kg / year: ▼ 1,1 % (-14,5 million kg / year)

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The household food waste panel: LATEST DATA AVAILABLE
From October 2016 to March 2017

	TOTAL PRODUCTS HAVE BEEN WASTED IN THE WAY THEY WERE BOUGHT							
Product	**From October 2015 to March 2016**				**From October 2016 to March 2017**			
	Total million kg / semester	Kg / household / semester	Total million € / semester (*)	Wasted vs bought (%)	Total million kg / semester	Kg / household / semester	Total million € / semester (*)	Wasted vs bought (%)
Meat	11,13	0,64	64,28	1,22	14,02	0,80	81,1	1,56
Fish	13,45	0,77	108,10	2,23	14,22	0,81	117,7	2,45
Dairy products	66,54	3,80	110,55	1,57	77,79	4,43	126,9	1,86
Fruits	158,43	9,05	228,60	7,57	180,31	10,26	267,8	8,81
Vegetables	91,05	5,20	161,10	5,68	79,97	4,55	149,9	5,16
Bread	31,40	1,79	76,20	3,90	33,81	1,92	81,7	4,31
Creams & purees	21,80	1,25	27,43	19,19	17,89	1,02	22,7	14,31
Drink	39,96	2,28	94,43	4,48	40,41	2,30	98,8	4,57
TOTAL	**531,58**	**30,37**	**1.278,48**	**3,64**	**575,01**	**32,73**	**1.399,5**	**3,99**

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(*) *Estimation*

The household food waste panel: LATEST DATA AVAILABLE
From October 2016 to March 2017

	TOTAL RECIPES COOKED HAVE BEEN WASTED			
	From October 2015 to March 2016		From October 2016 to March 2017	
Recipie	Total million kg / semester	Kg / household / semester	Total million kg / semester	Kg / household / semester
Salads	4,42	0,25	4,04	0,23
Meat dishes	10,74	0,61	12,50	0,71
Rie dishes	7,89	0,45	9,03	0,51
Pasta	8,44	0,48	7,22	0,41
Creams & purees	10,02	0,57	12,86	0,73
Leguminous dishes	23,18	1,32	22,50	1,28
TOTAL	86,84	4,96	94,24	5,36

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The household food waste panel: LATEST DATA AVAILABLE
From October 2016 to March 2017

% DISTRIBUTION OF FOOD WASTE BY REGIONS
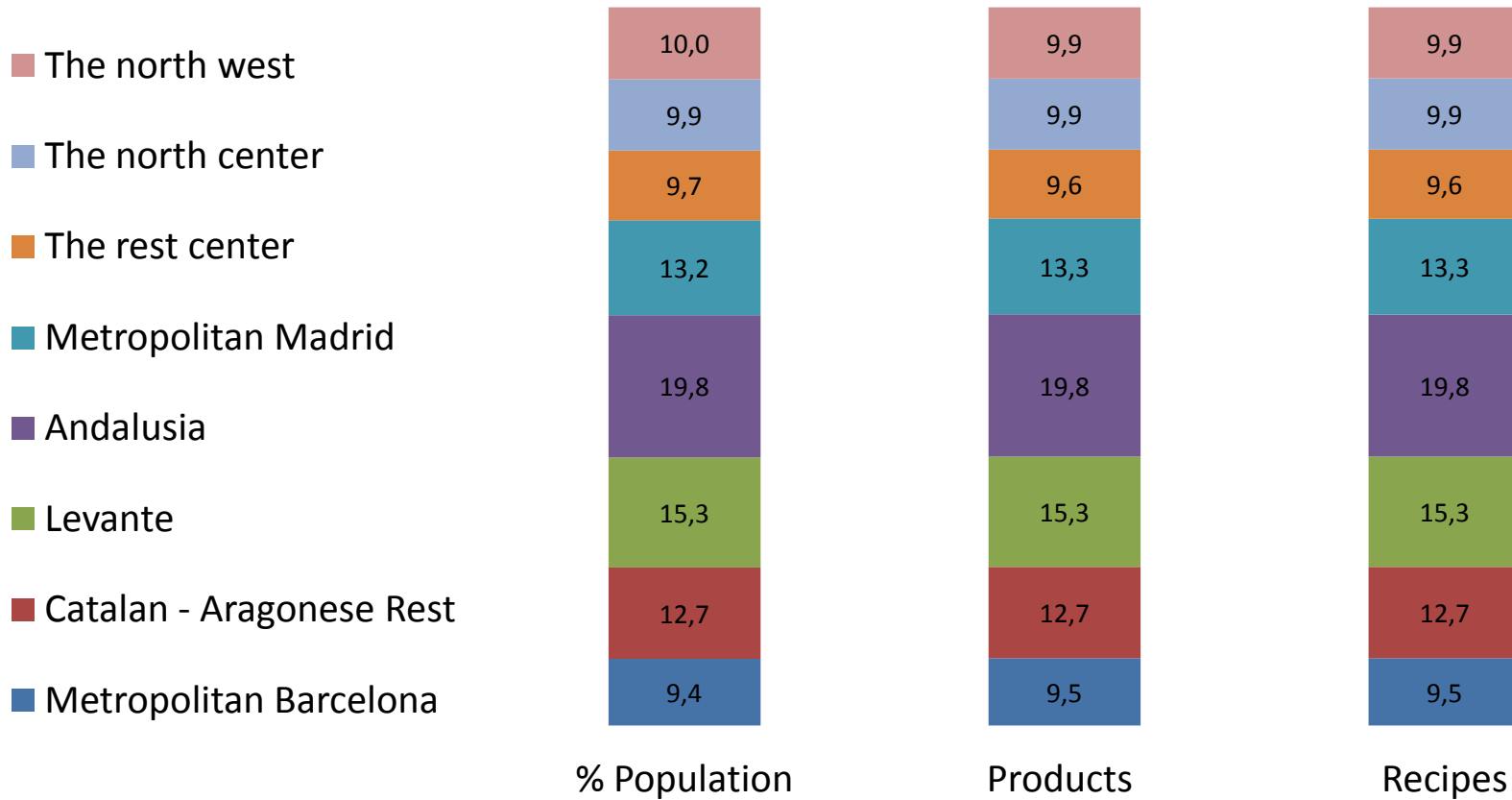
Region	% Population	Products	Recipes
The north west	10,0	9,9	9,9
The north center	9,9	9,9	9,9
The rest center	9,7	9,6	9,6
Metropolitan Madrid	13,2	13,3	13,3
Andalusia	19,8	19,8	19,8
Levante	15,3	15,3	15,3
Catalan - Aragonese Rest	12,7	12,7	12,7
Metropolitan Barcelona	9,4	9,5	9,5

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The household food waste panel: LATEST DATA AVAILABLE
From October 2016 to March 2017

% DISTRIBUTION OF FOOD WASTE BY AGE OF THE HOUSEWIFE
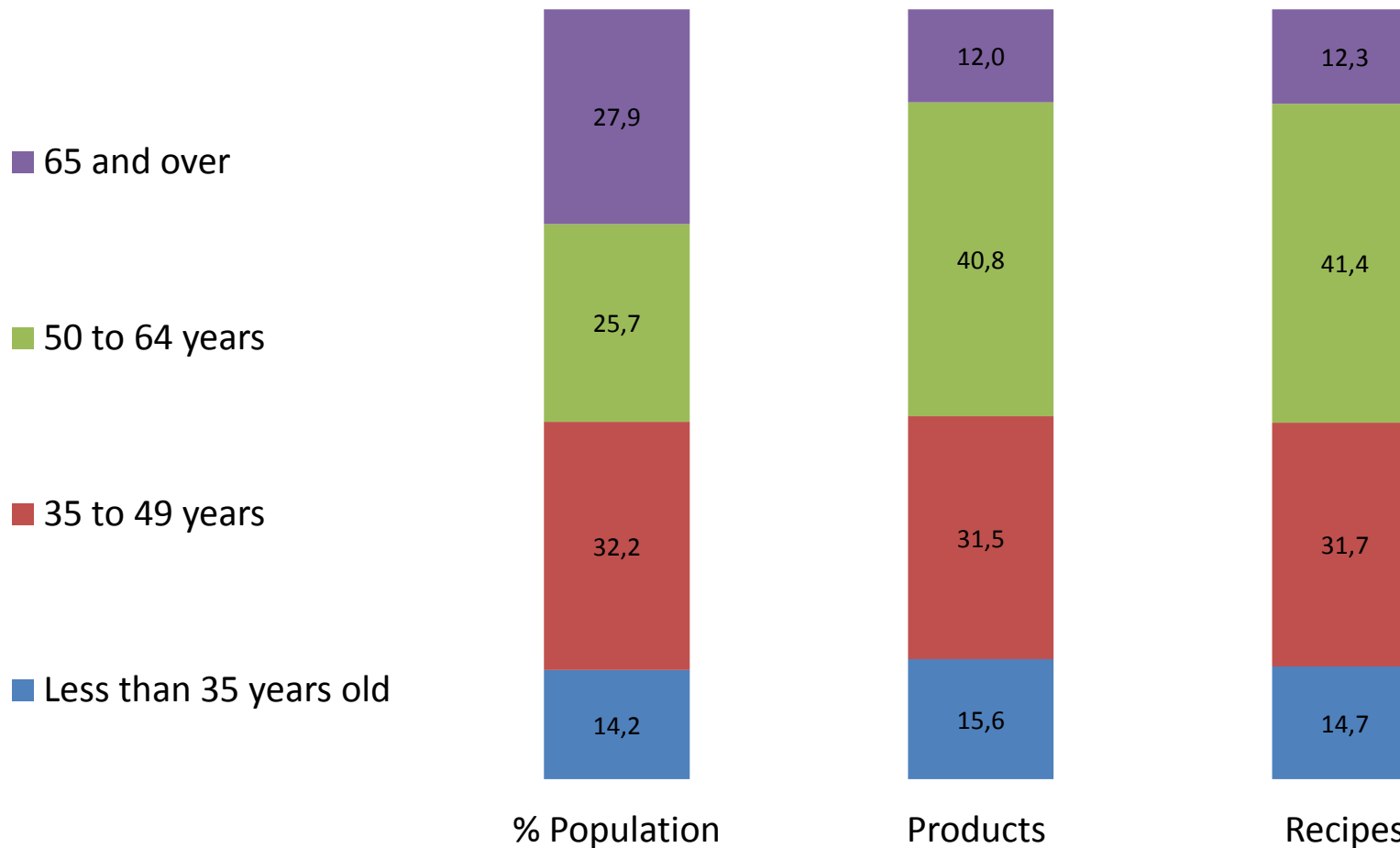
Legend:
- 65 and over
- 50 to 64 years
- 35 to 49 years
- Less than 35 years old

% Population
- 27,9
- 25,7
- 32,2
- 14,2

Products
- 12,0
- 40,8
- 31,5
- 15,6

Recipes
- 12,3
- 41,4
- 31,7
- 14,7

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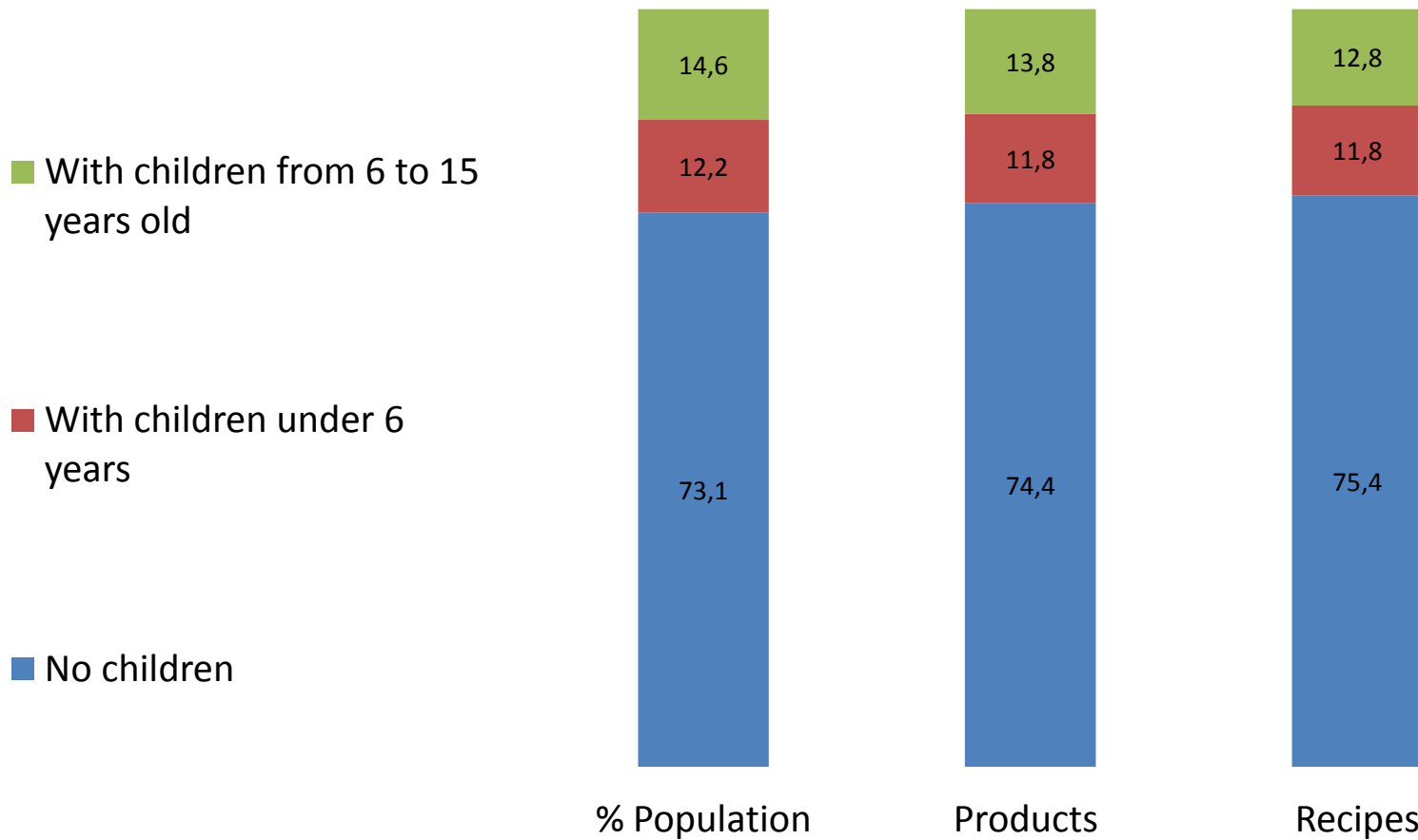
The household food waste panel: LATEST DATA AVAILABLE
From October 2016 to March 2017

% DISTRIBUTION OF FOOD WASTE BY SOCIOECONOMIC LEVEL
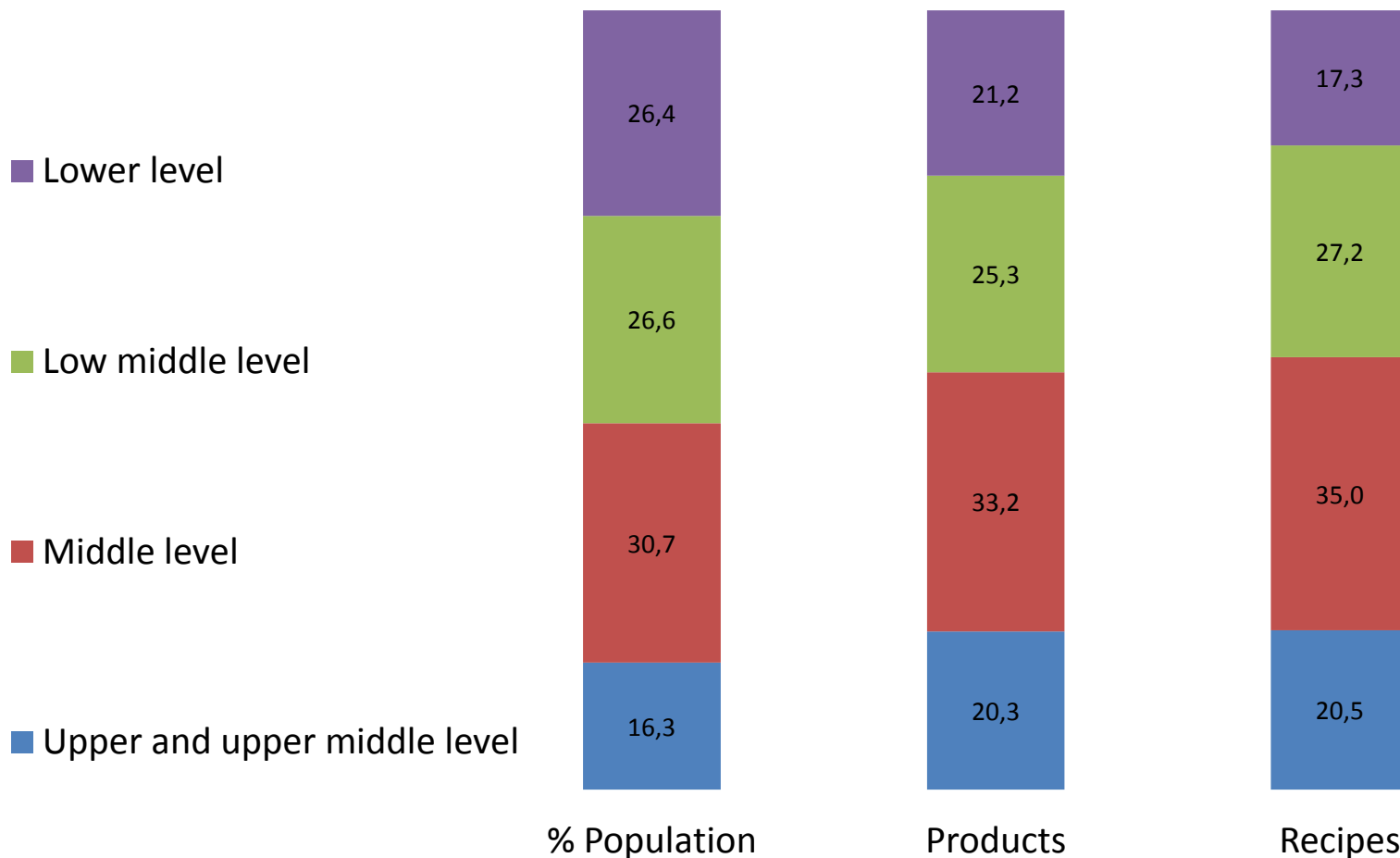
Legend:
- Lower level
- Low middle level
- Middle level
- Upper and upper middle level

% Population
- 26,4
- 26,6
- 30,7
- 16,3

Products
- 21,2
- 25,3
- 33,2
- 20,3

Recipes
- 17,3
- 27,2
- 35,0
- 20,5

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% DISTRIBUTION OF FOOD WASTE BY LIFE CYCLES

Legend:
- Retired
- Independent adults
- Adult couples without children
- Single-parent households
- Couples with older children
- Couples with children middle age
- Couples with small children
- Young couples without children
- Independent young people

Life cycle	% Population	Products	Recipes
Retired	23,6	9,8	10,1
Independent adults	7,8	7,9	7,4
Adult couples without children	10,9	18,9	18,5
Single-parent households	6,4	9,1	7,2
Couples with older children	9,7	10,4	11,9
Couples with children middle age	14,2	13,3	12,2
Couples with small children	12,2	13,2	11,8
Young couples without children	9,7	13,1	15,3
Independent young people	5,6	4,3	5,5

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Next steps

**WITHIN THE FRAMEWORK OF THE SPANISH STRATEGY
"MORE FOOD, LESS WASTE"**

Continuing to explore improvements to measurement

→

- ✓ Detailed data of thrown away & discarded via the sewer
- ✓ Know the amount of food used as compost at household level
- ✓ Monitoring of data by calendar years *(First year: 2016)*
- ✓ Historical data series in order to establish a target of reducing food waste

Design effective interventions to prevent food waste at household level

Availability of databases of FW at household level in the new website of the Strategy: www.menosdesperdicio.es

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Remember!

Reducing food losses and food waste is the responsibility of everyone

Isabel Hernández Zapata

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