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I DESENVOLUPAMENT AGROALIMENTARI

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Effects of Fiscal Policies addressed to Internalize the Social Cost of Obesity in Spain

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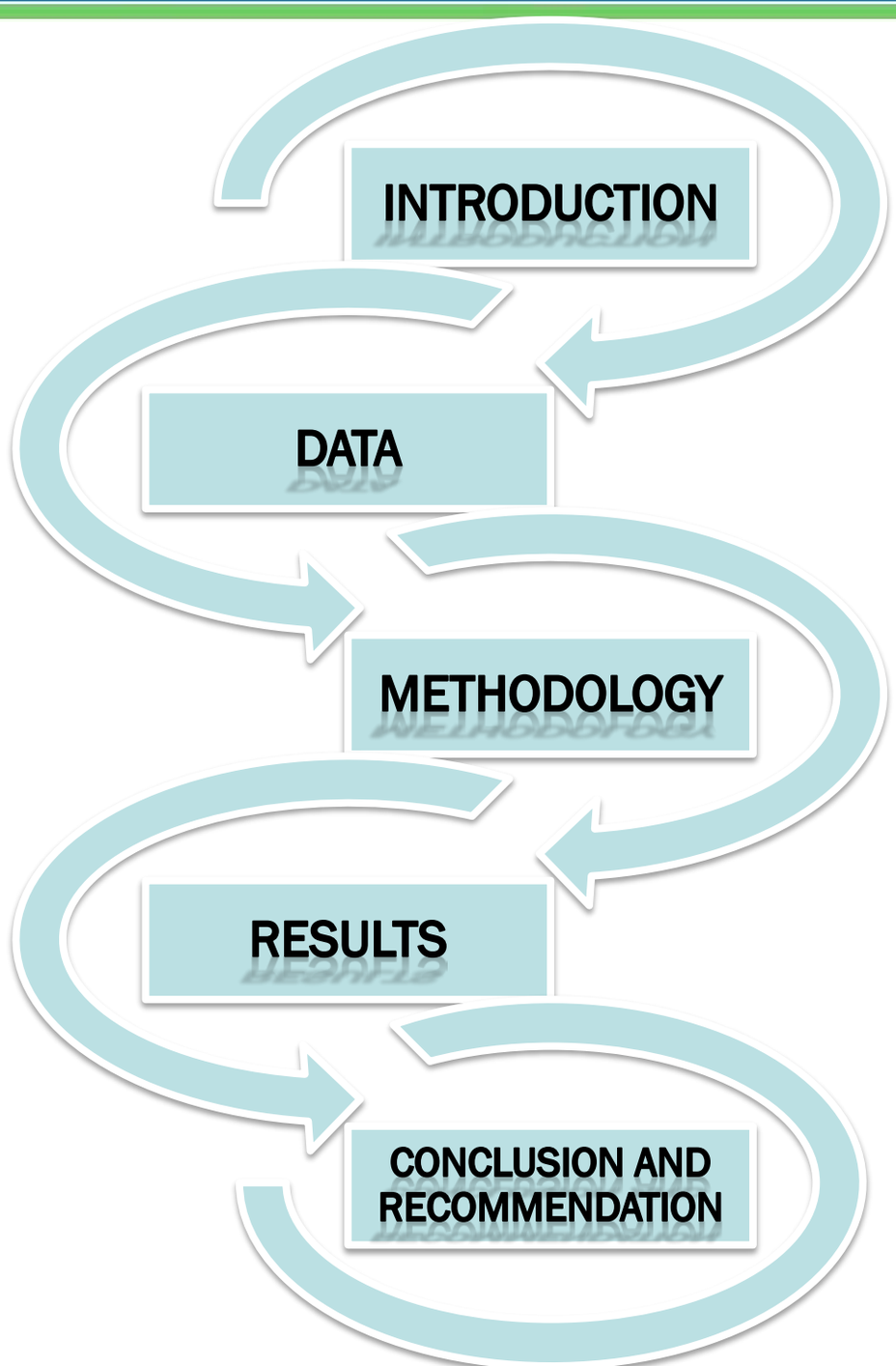
Outline of the presentation



Introduction

- Spain has the second highest prevalence rate of overweight and obesity in the EU.
- Information and regulatory policies have been ineffective.
- Researchers are calling for market intervention policies (Kuchler et al., 2005)
- Post-tax studies support the need for market intervention
  - E.g. France, Finland, Denmark, Mexico and some parts of US

Introduction

- In addition, market interventions are justified on the basis of:
  - Paternalism or time inconsistent preferences
  - Information asymmetry
- Nestle (2002) suggest five simultaneous changes in public policies:
  I. educational reforms;
  II. food labelling and advertising reforms;
  III. health care and training requirements;
  IV. transportation and urban facilities requirements;
  V. and tax policy reforms

Introduction

- I-IV have been applied in Spain except V.
- A tax reform can take two options:
    I. Change relative food price i.e. VAT or Pigouvian taxes
    II. Tax on excess body weight
- Empirical evidence based on (V) vary based on:
    - the demand models,
    - the tax scenarios (compensated and/or uncompensated),
    - food categories (subsets are usually considered)
    - Policy simulations (EU, National, Global goal)

Introduction

- Summary of Previous studies show that:
  - Market intervention policies affect behaviour and reduce unhealthy food consumption;
- However, limitations recorded include:
  - Use of AIDS model
  - Considerations to a reduced number of food products are (meat, meat and dairy, SSBs…)
  - Studies relied on either only uncompensated or compensated tax scenarios
  - Arbitrary tax scenarios

Objectives

- Past studies are based on arbitrary policy scenarios
  - No consideration has been given to internalizing the social/public cost that overweight and obese persons impose on society.
- Hence, we analyze the potential effectiveness of internalizing the public health cost of obesity in Spain.
  - Propose a revenue-neutral tax reform
  - Assess the impact on macro- and micro- nutrient consumption
  - Assess the distributional effect of the tax

Data

- Homescan panel data by Kantar Worldpanel
  - Day-to-day records of food purchases of 1146 Catalonian households in 2012.
- Products were aggregated into 16 food categories
  - based on Spanish Ministry of Agriculture´s nutrition-based guidelines.
- Nutrient data on foods consumed in Spain were used
  - obtained from the Spanish Food Composition Database (BEDCA).

Data

	Variable	Mean	Std. Dev
Expenditure Shares	Grains and grain-based products	4.48	0.03
	Vegetables and vegetable products	13.06	0.07
	Starchy roots, tubers, legumes, nuts and oilseeds	1.64	0.01
	Fruit and fruit products	20.68	0.09
	Beef, veal and lamb	2.06	0.02
	Pork	1.99	0.01
	Poultry, eggs, other fresh meat	6.74	0.04
	Processed meat products	3.66	0.02
	Fish and seafood	4.62	0.03
	Milk and dairy products	20.97	0.10
	Cheese	2.40	0.01
	Sugar and confectionary and prepared desserts	5.53	0.03
	Plant based fats	2.65	0.02
	Composite dishes	6.26	0.05
	Snacks and other foods	0.77	0.01
	Residual Category	2.47	0.02
Socio-Demographics	High Social Class	0.213	0.41
	Low Social Class	0.197	0.40
	Lower Middle Social Class	0.238	0.43
	Middle Social Class	0.352	0.48
	18-34 years	0.090	0.29
	35-49 years	0.422	0.49
	50-64 years	0.332	0.47
	60+ years	0.155	0.36
	Presence of Kids 0-5 years	0.158	0.36
	Presence of Kids 5+ years	0.198	0.40
	No Kids	0.644	0.48

Methodology

EASI DEMAND

- Price Indices
- Consumption Shares
- Demographics

$$w_{hi} = \sum_{r=1}^{5} v_{ir}\tilde{y}_h^r + \sum_{j=1}^{N} a_{ij} ln P_{hj} + \sum_{j=1}^{N} b_{ij} ln P_{hj}\tilde{y}_h + \sum_{k=1}^{K} c_{ik} z_{hk} + \sum_{k=1}^{K} d_{ik} z_{hk}\tilde{y}_h + u_{hi}$$

ELASTICITIES

- Price and Expenditure Elasticities
- Nutrient Elasticities

$$P_{Fj}^h = \sqrt{P_{Pj}^h * P_{Lj}^h}$$

POLICY SIMULATION

- Revenue Neutral tax based on marginal damage cost of obesity

IMPACTS

- Changes in Nutrient
- Changes in Consumption
- Consumer welfare

DISTRIBUTIONAL EFFECTS

- Body Mass Index
- Age Groups

Taxes and Subsidies

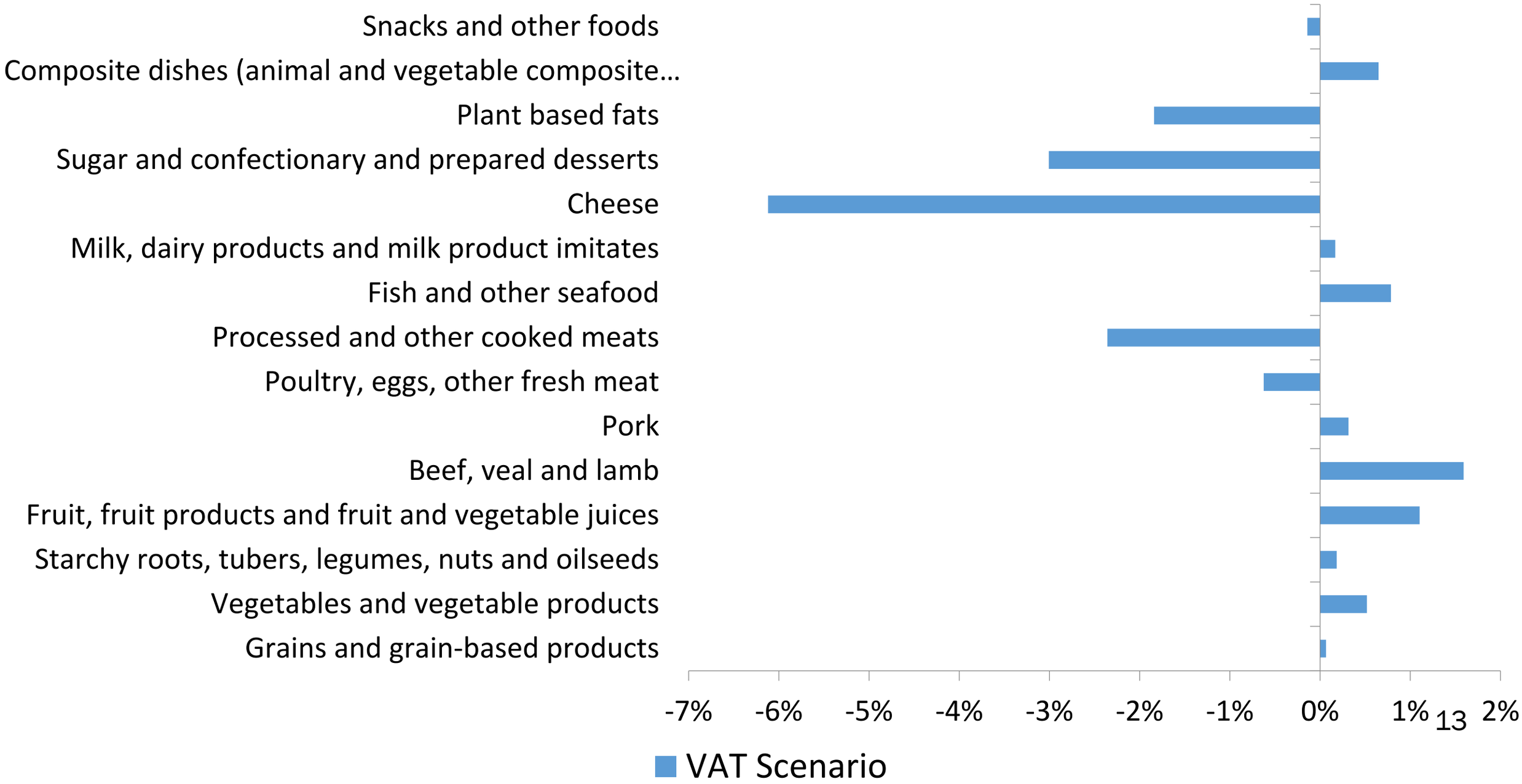
Fat tax Scenario

Food Categories	Annual consumption (Kg/person)	Gram/person/day	Average saturated fat content (g/100g)	VAT Rate	Share of damage cost/day (EUR)	Price change
Grains and grain-based products	26.67	73.06	0.82	4%	0.00	-1.19%
Vegetables and vegetable products	60.77	166.50	0.04	4%	0.00	-1.19%
Starchy roots, tubers, legumes, nuts and oilseeds	6.68	18.31	1.34	4%	0.00	-1.19%
Fruit, fruit products and fruit and vegetable juices	93.55	256.29	0.00	7%	0.00	-1.19%
Beef, veal and lamb	9.13	25.02	3.50	10%	0.01	1.4%
Pork	8.52	23.34	3.06	10%	0.01	1.1%
Poultry, eggs, other fresh meat	31.18	85.43	3.55	10%	0.01	0.9%
Processed and other cooked meats	16.05	43.97	9.66	10%	0.04	3.7%
Fish and other seafood	21.07	57.74	0.69	10%	0.00	-1.19%
Milk, dairy products and milk product imitates	89.86	246.18	1.15	7%	0.00	-1.19%
Cheese	10.19	27.92	18.64	4%	0.07	7.2%
Sugar and confectionary and prepared desserts	23.86	65.38	8.82	10%	0.03	3.3%
Plant-based fats	11.31	30.99	23.11	10%	0.09	8.8%
Composite dishes	24.56	67.29	0.76	10%	0.00	-1.19%
Snacks and other foods	3.03	8.30	3.89	10%	0.02	1.5%

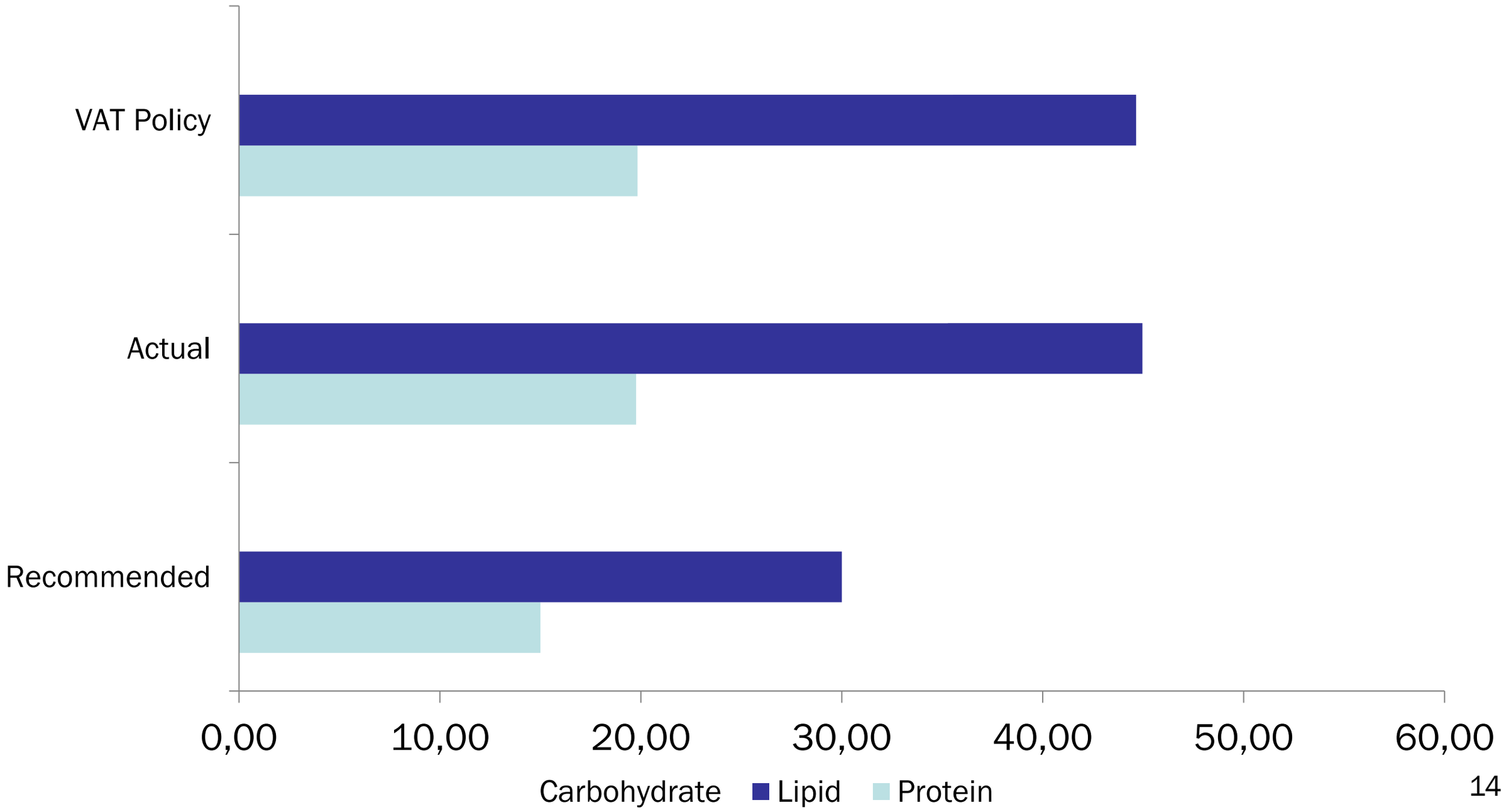
RESULTS – Elasticities

	Age: 18–35 years	Age: 35–49 years	Age: 50–64 years	Age: 65+ years	Under-weight	Normal weight	Overweight	Obese	Average
Grains and grain-based products	-0.49***	-0.56***	-0.54***	-0.45***	-0.48***	-0.53***	-0.50***	-0.57***	-0.53***
Vegetables and vegetable products	-0.64***	-0.52***	-0.60***	-0.64***	-0.64***	-0.56***	-0.58***	-0.61***	-0.58***
Starchy roots, tubers, legumes, nuts and oilseeds	-0.76***	-0.81***	-0.82***	-0.78***	-0.83***	-0.80***	-0.81***	-0.81***	-0.81***
Fruit and fruit products	-1.09***	-0.99***	-0.97***	-0.97***	-1.00***	-0.99***	-0.96***	-0.99***	-0.99***
Beef, veal and lamb	-1.08***	-0.95***	-0.88***	-0.93***	-0.95***	-0.93***	-0.89***	-0.94***	-0.93***
Pork	-1.03***	-0.98***	-0.96***	-0.97***	-0.98***	-0.97***	-0.96***	-0.98***	-0.97***
Poultry, eggs, other fresh meat	-0.56***	-0.49***	-0.54***	-0.67***	-0.46***	-0.55***	-0.53***	-0.55***	-0.54***
Processed meat products	-0.54***	-0.52***	-0.35***	-0.31***	-0.36***	-0.43***	-0.39***	-0.48***	-0.44***
Fish and seafood	-0.16	-0.23*	-0.34***	-0.39***	-0.30***	-0.26***	-0.26***	-0.37***	-0.30***
Milk and dairy products	-0.65***	-0.65***	-0.53***	-0.48***	-0.67***	-0.61***	-0.56***	-0.54***	-0.58***
Cheese	-0.84***	-0.94***	-0.99***	-0.94***	-0.91***	-0.95***	-0.99***	-0.94***	-0.95***
Sugar and confectionary and prepared desserts	-0.93***	-0.91***	-0.87***	-0.87***	-0.91***	-0.90***	-0.88***	-0.89***	-0.90***
Plant-based fats	-0.12	-0.41***	-0.49***	-0.43***	-0.38***	-0.40***	-0.52***	-0.45***	-0.43***
Composite dishes	-0.67***	-0.71***	-0.65***	-0.51***	-0.54***	-0.67***	-0.71***	-0.65***	-0.67***
Snacks and other foods	-0.70***	-0.71***	-0.48***	-0.29**	-0.69***	-0.63***	-0.59***	-0.54***	-0.61***
Residual category	-1.27	-0.99	-0.79	-0.92	-1.01	-0.94	-0.80	-0.95	-0.93

RESULTS – Changes in Consumption



Changes in Nutrient Ratios



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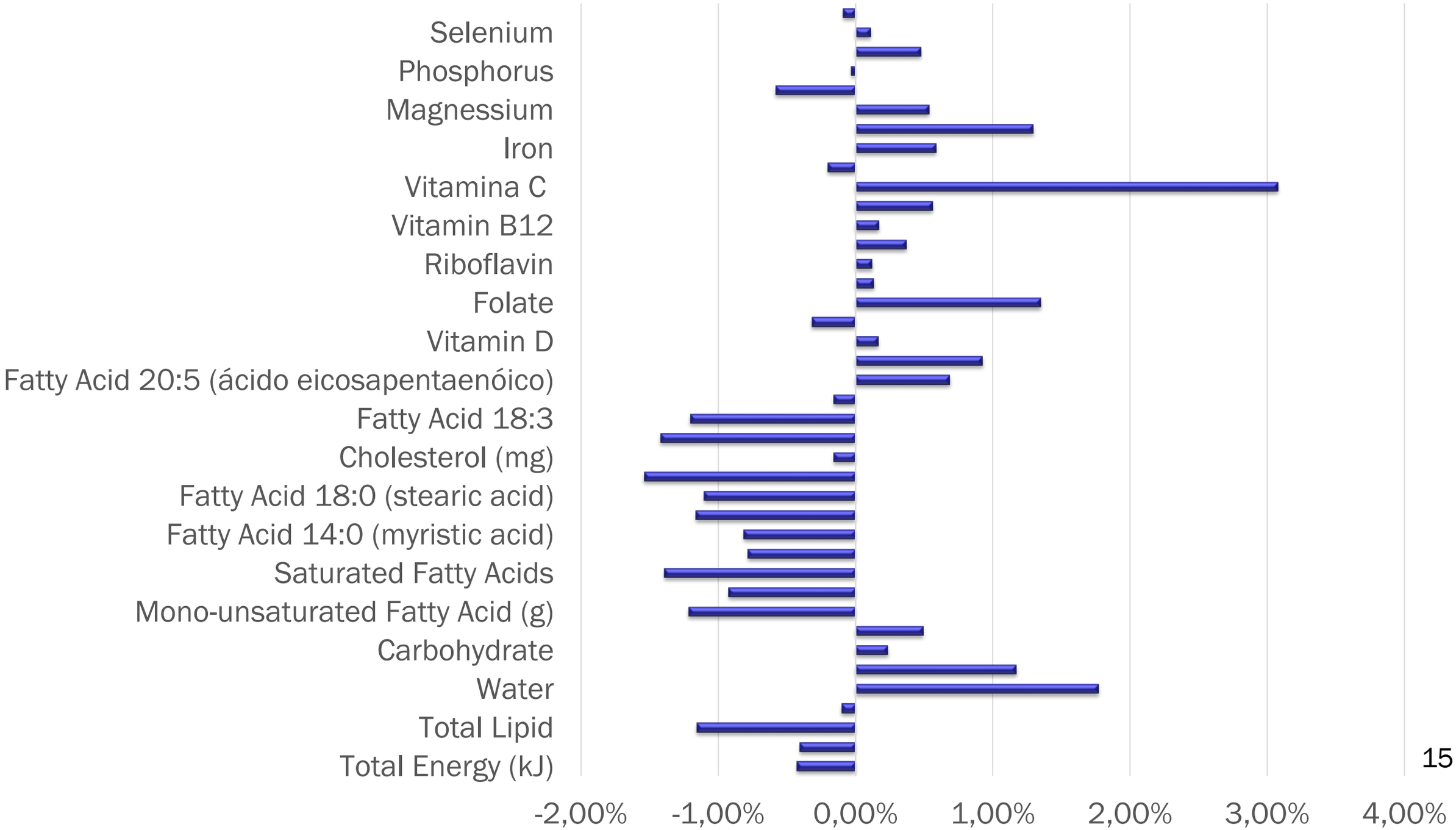
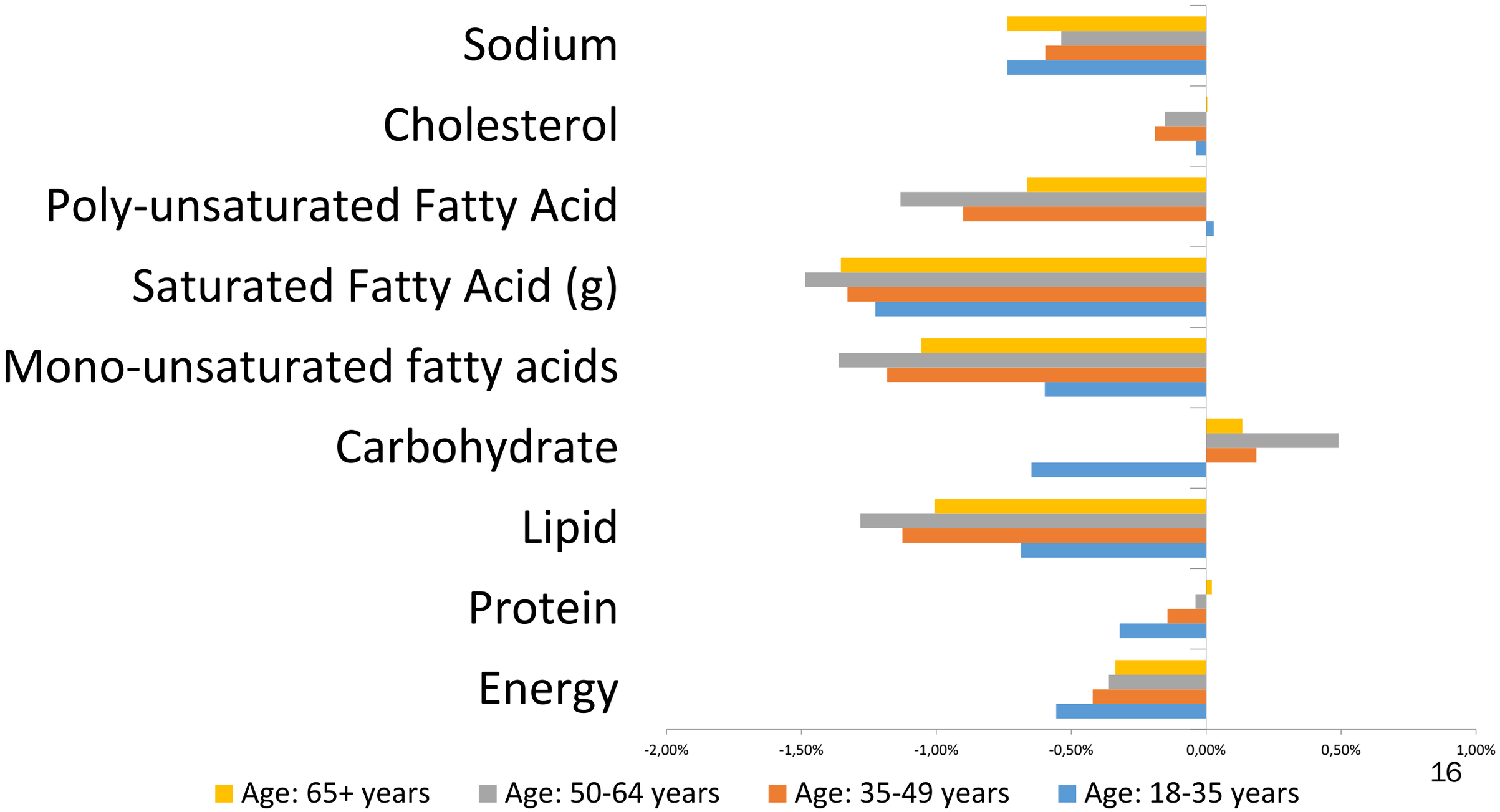
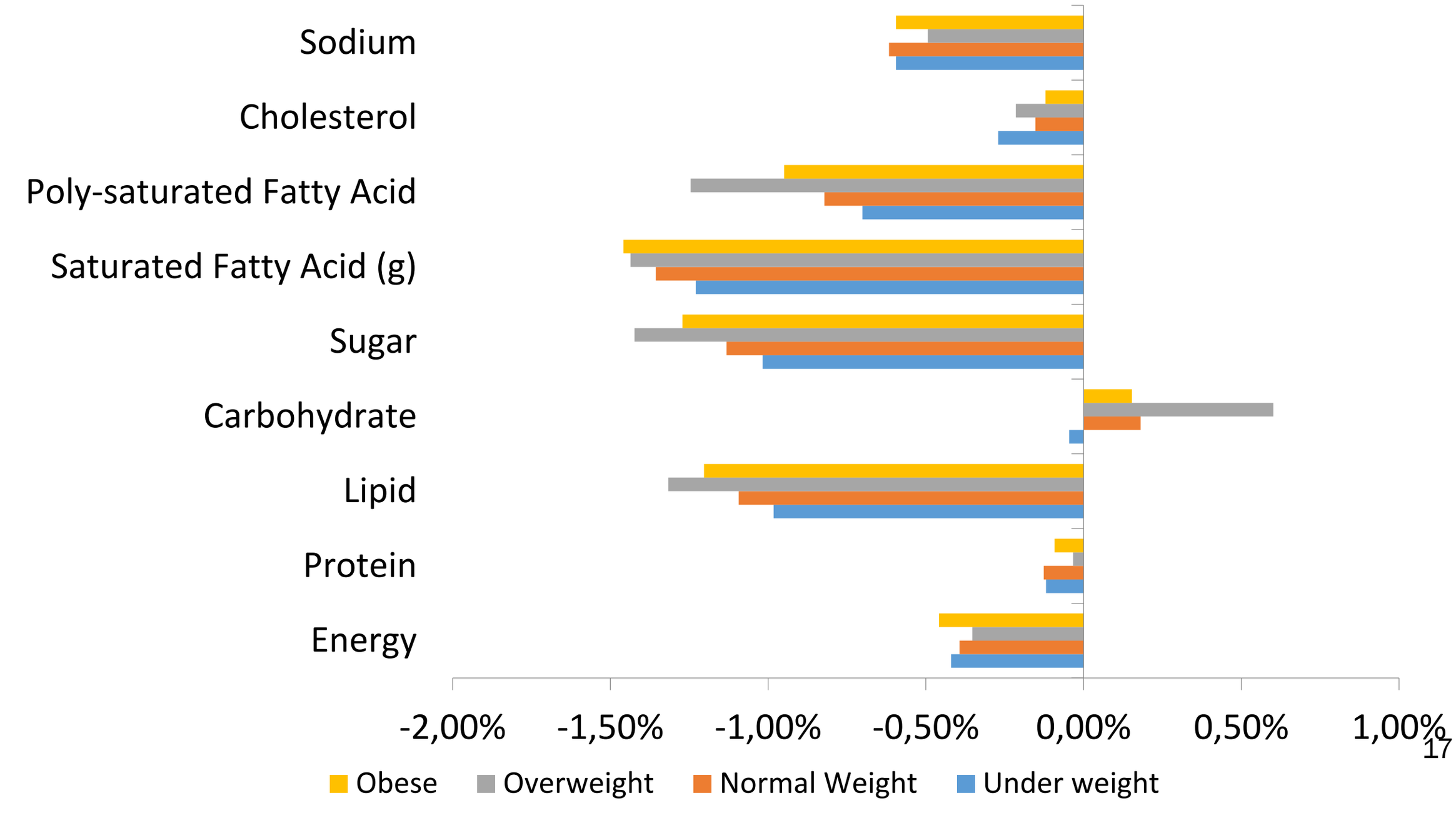
Changes in Nutrient Intake



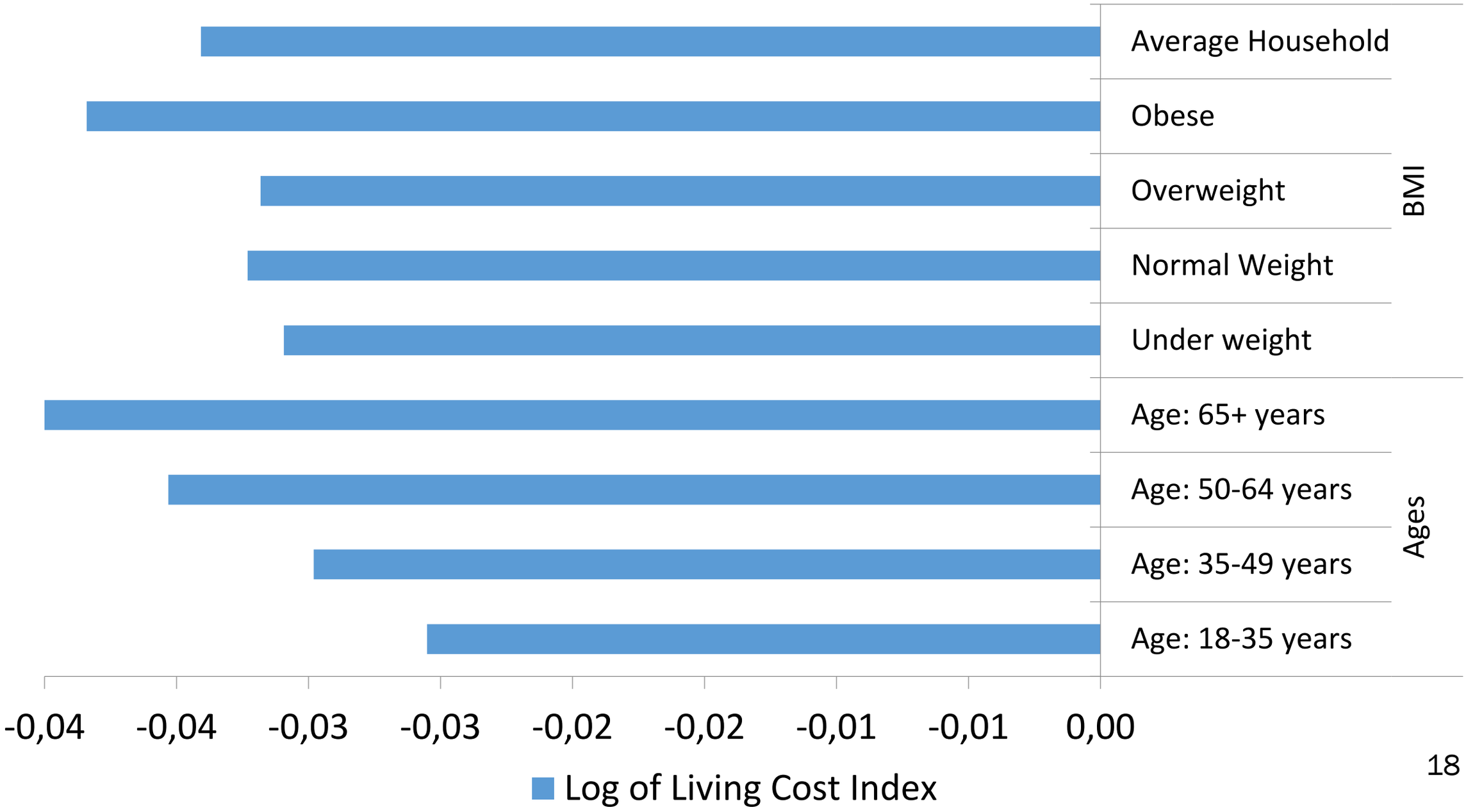
Effect of the Fiscal Policy on Ages



Effect of the Fiscal Policy on Weights



Expenditure Savings for Ages and Weights



Conclusion & Recommendation

- The tax reform leads to improvement in the quality of diet
  - The improvements are marginal, but they do move in the right direction.
- Decline in detrimental micronutrients
  - saturated fatty acid, sodium, and cholesterol.
  - On the negative side, poly-unsaturated fatty acid intake will decline.

Conclusion & Recommendation

- The tax is more effective for persons with obesity and overweight.
- The tax reform does not impose any economic burden on consumers
  - There will be expenditure savings for all household segments.
- Fiscal Policies provide efficient alternative for government to reduce health cost.