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Medicina Preventiva  
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# **Trends in the environmental impacts of unprocessed or minimally processed, processed, and ultra-processed animal products in Brazil over 30 years**

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# BACKGROUND AND AIM



- The overconsumption of meat and other animal products is associated with increased burden of diseases and environmental impacts
- How are different levels of processing linked to this?
- We aim to assess the trends in the consumption of unprocessed or minimally processed, processed, and ultra-processed animal products, and the environmental impacts associated with them

# METHODOLOGY



Brazilian Household Budget Survey (1987, 1996, 2003, 2009, 2017)

Animal products (beef, pork, poultry, eggs, fish, milk, and cheese)

## NOVA system

- > unprocessed/minimally; processed;
- > processed foods;
- > ultra-processed

## Share (%) kcal

Brazilian Food Composition Table

## Environmental impacts

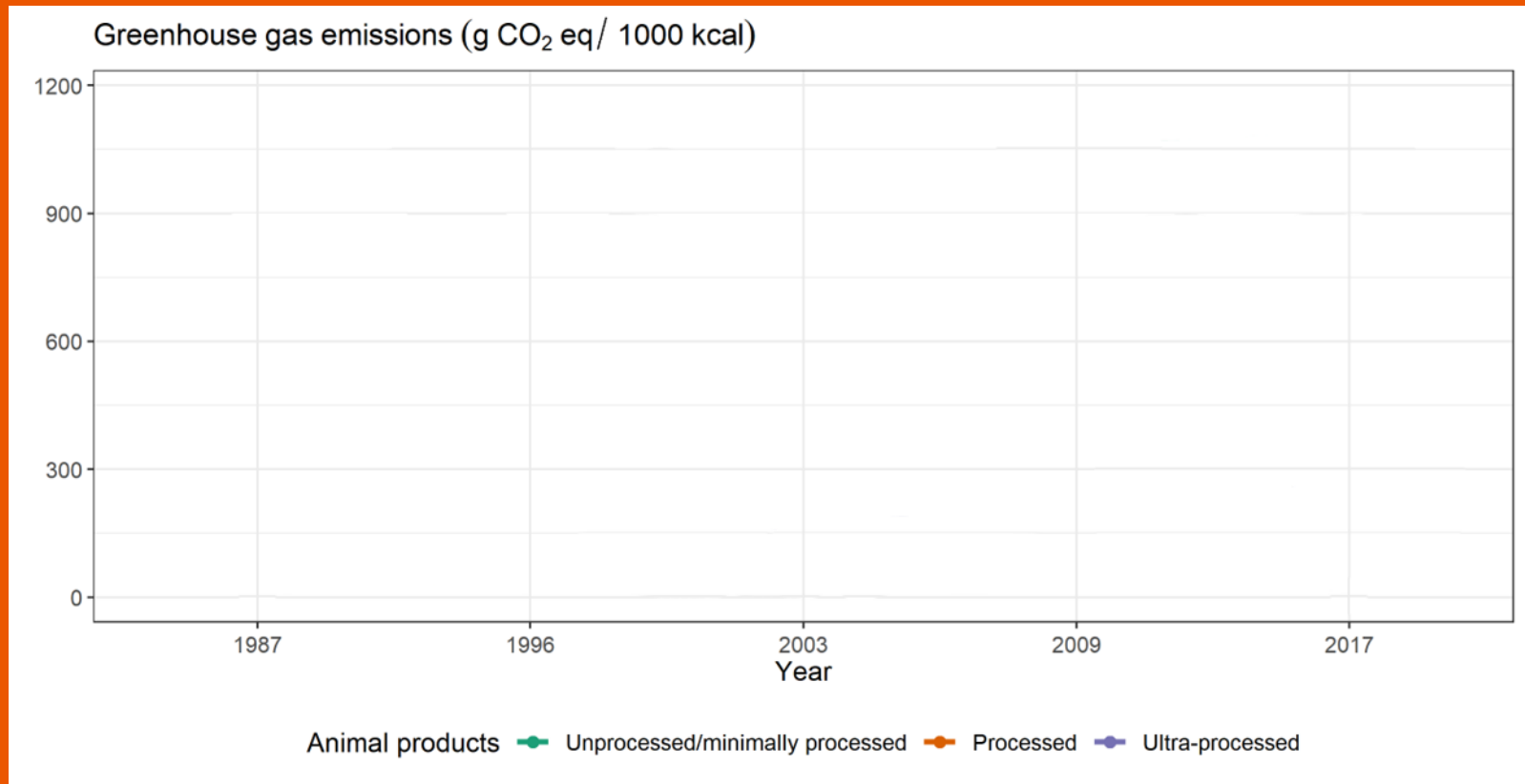
- > Garzillo 2019
- > GHGE, g CO<sub>2</sub> eq
- > Water footprint, litres
- > Ecological footprint, m<sup>2</sup>

p-for-trend: linear regression using the population size as a weighting factor

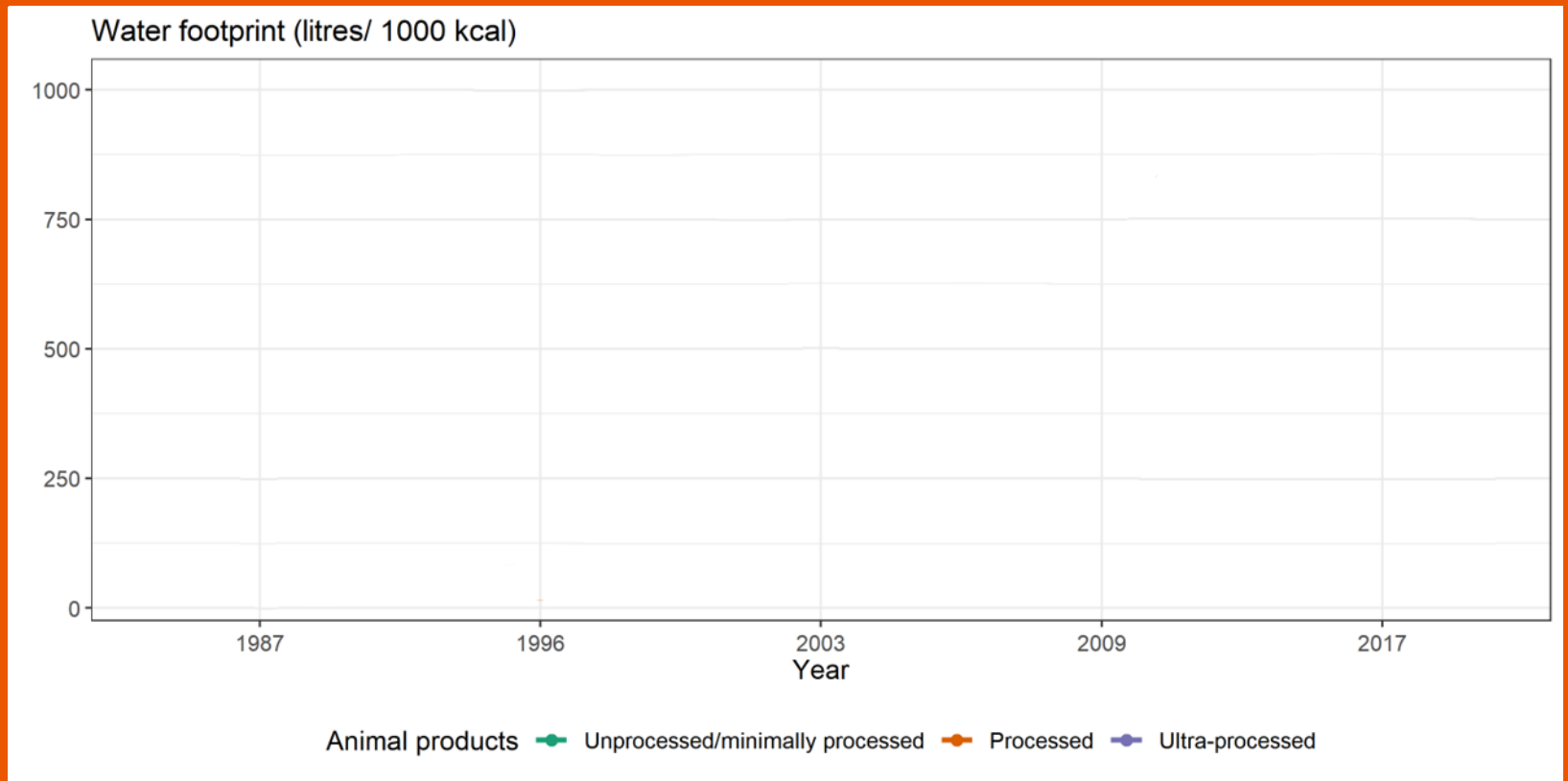
**Table 1. The share (%) of unprocessed, processed, and ultra-processed animal products to daily calories from food purchases. Brazilian Metropolitan Areas, 1987-2017.**

NOVA food group	1987	1996	2003	2009	2017	p-trend	change
Unprocessed/minimally processed	15.5 (0.3)	16.8 (0.6)	15 (0.4)	14.7 (0.3)	15.2 (0.3)	0.017	-2%
Processed	1.6 (0.1)	1.8 (0.2)	2 (0.1)	2.2 (0.1)	3 (0.2)	0.000	88%
Ultra-processed	1.1 (0.1)	2.1 (0.2)	3.4 (0.2)	3.9 (0.2)	4.3 (0.2)	0.000	291%

The values as presented as population-weighted mean (standard error)



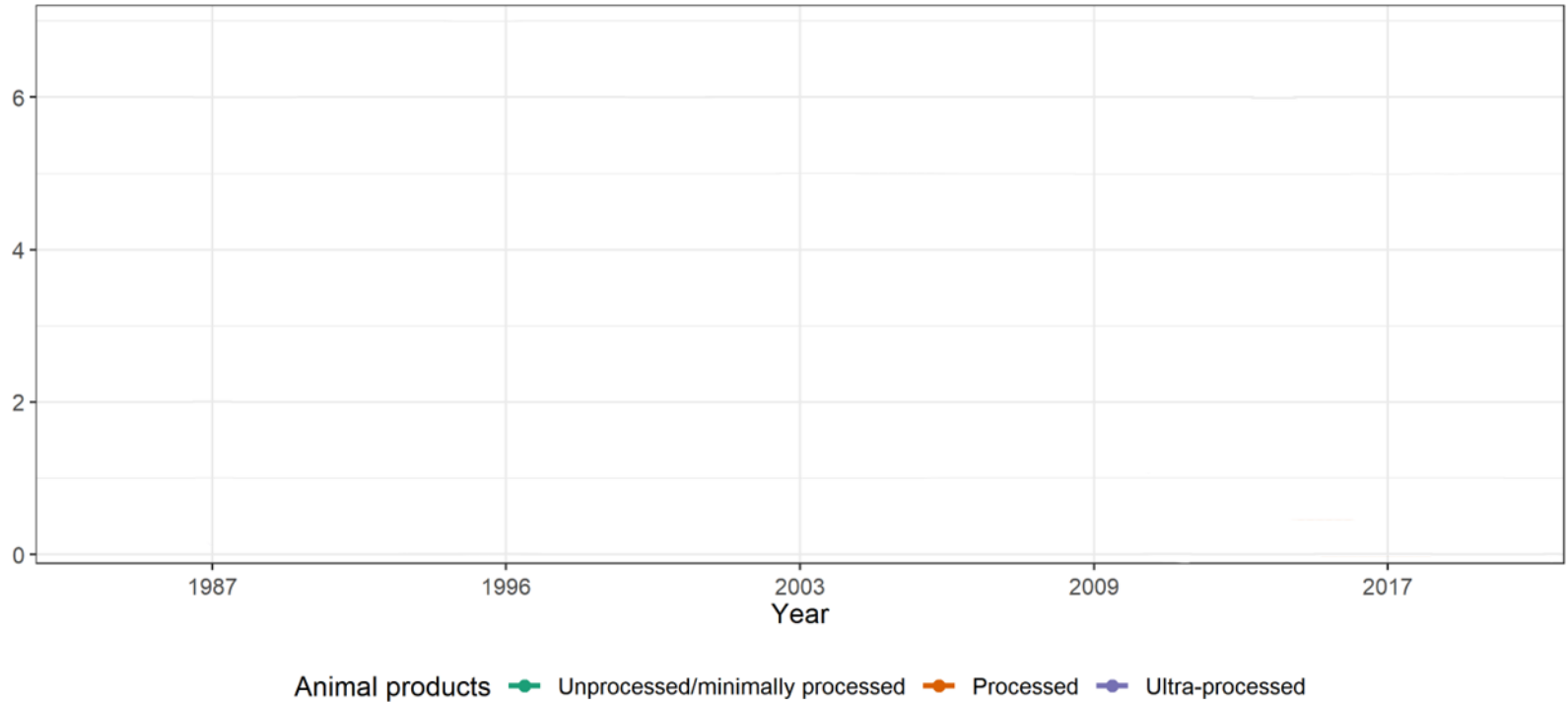
**Figure 1. Greenhouse gas emissions per 1000 kcal of unprocessed, processed, and ultra-processed animal products. Brazilian metropolitan areas, 1987-2017.**



**Figure 2. Water footprint per 1000 kcal of unprocessed, processed, and ultra-processed animal products. Brazilian metropolitan areas, 1987-2017.**



Ecological footprint ( $\text{m}^2$ ) / 1000 kcal



**Figure 3. Ecological footprint per 1000 kcal of unprocessed, processed, and ultra-processed animal products. Brazilian metropolitan areas, 1987-2017.**

# CONCLUSION



- The consumption of processed and ultra-processed animal products has been increasing
- Consequently, the environmental impacts of these products are growing
- Action is needed to shift this growing trends

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**Obrigada / Thank you**

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