

# Meat Wars: Measuring Consumer Preferences For Hybrid Plant-based Versus Pork Meat



## Alternatives In An Omnivorous Population



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### Abstract

This work examines consumer preferences for hybrid plant/pork-based meat Frankfurt sausages in Spain. An online survey measured preferences and willingness to pay through a discrete choice experiment (DCE). The results from an error component random parameter logit (ECRPL) model show that consumers do not attach any utility on Frankfurt sausages made from hybrid meat (half pork half plant-based). Yet, consumers' utility increases when sausages are sold in a package with 80% less plastic. **Keywords:** Hybrid meat, plant-based meat, consumers, willingness to pay.

### Problem Statement

High meat consumption in many countries poses a problem as it increases disease risk and greenhouse gas emissions (Bianchi et al., 2022). To address these issues, plant-based meat alternatives have been introduced, replicating animal meat's taste and appearance. However, their consumption remains low due to unfamiliarity and lack of acceptability, especially in Spain with its high animal meat consumption. Barriers include meat enjoyment, eating routines, and resistance to change habits (Melendrez et al., 2020).

### Objective and contribution

We examine consumer preferences for hybrid plant/pork-based meat Frankfurt sausages in Spain. This is the first research in Spain to use a DCE on hybrid meat alternatives. Also, this case-specific study aims to assist a local producer in differentiating their product in the market by identifying profitable marketing and pricing strategies.

### Methods

**Online survey with consumers (n=223)**

- **The survey measures:** WTP from a DCE.
- **Where:** Zaragoza 2021

- **Participants:** Older than 18 years, primary food buyers and cooks in the household.
- **Attributes:** Based on a market research.

### Choice experiment

The choice sets were generated following the optimal construction by Street & Burgess, (2007). The DCE consisted of eight choice sets split into two blocks with 96.66% efficiency. Each choice set had two designed alternatives and the non-buy option and respondent were asked to make four choices. An ECRPL with correlated errors model was used the following utility function:

$$U_{njt} = \text{nobuy} + \beta_1 \text{PRICE}_{njt} + \beta_2 \text{HYBRID}_{njt} + \beta_3 \text{PACKAGE}_{njt} + \varepsilon_{njt}$$

### Results

Table 1 show that the non-buy coefficient is negative and statistically significant indicating that the utility is higher for the designed alternatives than the no-buy option. PRICE is negative in line with the economic theory. The non-statistically significant parameter "Hybrid" indicates that consumers do not attach any utility when the Frankfurt sausages are made from half pork and half plant-based meat. Conversely, consumers' utility increases when sausages are sold in a package with 80% less plastic compared to a 100% fossil-based plastic package. These results align with the WTP values. Consumers are willing to pay an additional 0.42€ for a package with less plastic, while are indifferent for "hybrid" Frankfurt sausages.

Table 1. The ECRPL model with correlated errors.

	Coefficients	T-ratio (z)
<b>Mean values (Standard deviation)</b>		
<b>Non-buy</b>	-3.335	-10.09***
<b>Price</b>	-1.894	-22.58***
<b>Hybrid</b>	0.109 (2.214)	0.59 (12.20***)
<b>Package</b>	0.791 (1.032)	4.62*** (7.10***)
<b>Standard deviation of the latent random effect</b>		
$\sigma$	5.118	11.27***
<b>Observations</b>	1,784	
<b>Log likelihood</b>	-1,145.75	
$\chi^2$	1,628.33	
<b>McFadden Pseudo R2</b>	0.415	
<b>Willingness to pay</b>		
<b>Hybrid</b>	0.057	0.59
<b>Package</b>	0.417	5.11***

### Conclusions

This research shows how Spanish consumers perceive hybrid meat and packaging alternatives. The results can help producers develop communication strategies in line with consumer' preferences and WTPs. Future studies should include larger samples.

### References

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