



# COVID-19 and household food waste in Colombia: the effects of the strict lockdown in 2020.

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## Introduction

- » Global food waste comes along with e.g., economic loss for both the households and the food value chains, the loss of natural resources, and additional greenhouse gas emissions.
- » Food waste rather results from the lack of routines and planning in terms of production, purchase, and consumption.
- » The COVID-19 pandemic is not only affecting public health, employment, or household incomes, but also the food system. The COVID-19 lockdowns caused that some food did not reach the final consumers and was wasted in the different links of the food value chains.
- » There does not exist a single food waste behavior in the face of the pandemic and its mitigation measures, but a heterogeneity in the behaviors that is linked to household incomes.

## Objective

To analyze changes in the intention to reduce household food waste and in the actual food waste behavior of consumers during the COVID-19 lockdown in Colombia in 2020

## Results and analysis

### Relationship between household income and waste levels

- » 84% of the surveyed households perceived a reduction in their income. 55% stated to have reduced food waste, while 31% have maintained and 14% have increased the pre-pandemic levels.
- » The logistic regression between the decrease in household food waste and the decrease in household income reveals that if the household income declines by more than 25%, the Odds Ratio of reducing household food waste ranges between 60 and 75%.

### Consumer intention to not waste food

- » The Random Forest classification model indicates that the most significant variables are food waste attitudes, return to normality (no lockdown), household income, household income reduction, financial attitudes, and control of perceived behavior.
- » The results of the ordered logistic regression suggest that the variables concern about the COVID-19 situation are significant in explaining changes in the intention to not waste food (Table 1).

Table 1. Ordered logistic regression for the variable intention to not waste food. Source: own elaboration.

Variables	Intention	Odds ratio
Reduction in household income during COVID-19 lockdown	n.a.	
Return to normality	n.a.	
Concerns about the COVID-19 situation	0.331** (0.141)	1.3244
Food waste attitudes	0.814*** (0.151)	2.2896
Financial attitudes	0.489*** (0.102)	1.6644
Moral standards	n.a.	
Identity of a good supplier	n.a.	
Subjective norms	0.370** (0.151)	1.4035
Control of perceived behavior	0.590*** (0.199)	1.8649
Food expenses	n.a.	
Gender	n.a.	
Educational level	n.a.	
Monthly household Income	n.a.	
cut1	5.074***	(1.306)
cut2	6.196***	(1.172)
cut3	9.119***	(1.228)
cut4	10.888***	(1.275)
Observations	576	
n	576	

Robust standard errors in parentheses; \*\*\*p < 0.01, \*\*p < 0.05; n.a., variables that are not significant at any level of significance.

### Further reading

Mejía D, Díaz MF, Charry A, Enciso K, Ramírez O, Burkart S. 2021. "Stay at Home": The effects of the COVID-19 lockdown on household food waste in Colombia. *Front. Psychol.* 12:764715. <https://doi.org/10.3389/fpsyg.2021.764715>

Burkart S, Díaz MF, Enciso-Valencia K, Urrea-Benítez JL, Charry-Camacho A, Triana-Ángel N. 2020. COVID-19 and the bovine livestock sector in Colombia: Current and potential developments, impacts and mitigation options. International Center for Tropical Agriculture (CIAT). Cali, Colombia. 36 p. <https://hdl.handle.net/10568/108354>

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## Methodology

- » Application of the Theory of Planned Behavior (TPB): There is a difference between intentions and actions, and, although all actions are controlled by intentions, generally not all intentions materialize into actions.
- » Data sources: Survey with 579 food consumers in Bogotá, Medellín, Cali and Barranquilla, Colombia (Figure 1).
- » Considering the TPB, we applied Random Forest and Ordered Logistic Regression models.

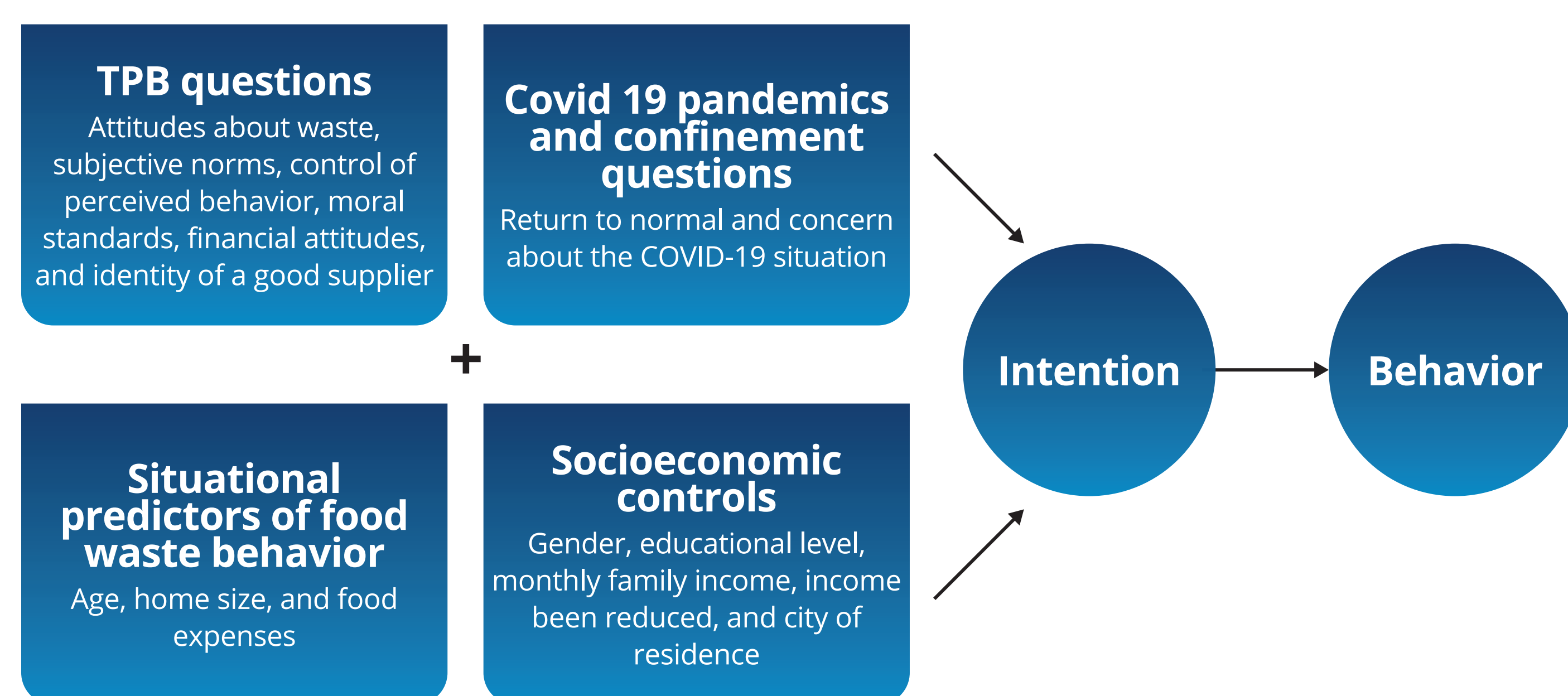


Figure 1. Overview on the dimensions used to predict food waste intention and behavior. Source: own elaboration.

- » Both, the Random Forest and the logistic regression models show that the variables related to the TPB may explain changes in the intention not to waste food, indicating that the TPB is a valid framework for our analysis.

### Actual Food Waste Behavior

- » In a first step, we evaluate the declared behavior with a Likert scale, in a second step, we evaluated the declared behavior against the real reduction of household food waste.
- » In both exercises we found that the TPB responds well to analyzing the decision to reduce household food waste during the lockdown.
- » Financial attitudes play an important role in both specifications, highlighting that there is an empirical relationship between household income and food waste behavior.

## Conclusions

- » The intention to reduce household food waste can be predicted by considering the variables financial attitudes, subjective norms, and control of perceived behavior.
- » Although personal considerations about household food waste are relevant predictors, the differential factor between the willingness to not to waste food and effectively not doing it lies in the economic conditions of the households.
- » We find it interesting to consider both behaviors (ordinal and nominal), since although the TPB can predict ordinal behavior, it seems to fail predicting nominal behavior. We consider that this might be due to the strong impacts the COVID-19 pandemic had on household incomes in Colombia.
- » Fears and concerns are significant predictors, highlighting the need of accurate communication strategies regarding the pandemic and its impacts on society, e.g., by providing correct numbers on infections, unemployment, deaths, and mitigation measures for reducing panic-driven consumer behaviors.

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