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Lessons Learned from Food Waste Dynamics in German Households Before and During the COVID-19 Pandemic

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Abstract

The impact of the COVID-19 pandemic on the reliability of global supply chains, the availability of food products, food prices, and food purchase and consumption behaviour has been significant. This study aims to identify potential differences in food waste levels and behaviours in Germany during the pandemic compared to pre-pandemic periods (Witte et al., 2025). The data are based on two household food waste diary studies with sample sizes of over 6,500 participants each, which are representative of Germany in terms of residency criteria, age, income, and household size. Descriptive statistics and a mixed model approach are used to examine food waste amounts per product group, disposal reasons and lifecycle categories, and to compare the 2020 survey year with 2016/17. A linear mixed model was applied to examine the impact of the pandemic and lockdown phases on food waste levels in 2020. The results show that total food waste, as well as unavoidable food waste, increased significantly during the pandemic compared to the same period in the 2016/17 survey. Notably, avoidable food waste decreased in 2020. This suggests an improvement in food management skills. At the same time, food consumption — and therefore unavoidable food waste, such as peels and bones — shifted from outside to inside the home. The composition of product groups was also affected by altered consumption patterns during the pandemic. For instance, this resulted in higher levels of unavoidable beverage waste, such as coffee grounds and tea bags, as well as vegetable waste, such as peels and seeds. Meanwhile, there was lower waste in baked goods, canned food, convenience products and prepared dishes. Due to the expected error caused by socially desirable responses, the study should not be used for quantitative purposes. The value of the study lies primarily in the differences between the years and the available information on the composition of total food waste in terms of avoidability and various product groups. This information can be used as a basis for further policies and interventions, particularly in the context of the revised Waste Framework Directive in the European Union. The findings are relevant to the post-pandemic period as they raise the question of whether a slower pace of life is necessary for people to adopt more sustainable food behaviours, and to develop appropriate planning, storage and handling practices. Therefore, policies that extend beyond the food sector should encourage citizens to engage with the issue of food (waste), prioritise it over other activities, and develop an interest in food management. Future research should also examine ways to encourage behaviours that reduce food waste, as well as the long-term effects of disruptions to the food supply chain on everyday household life in relation to food waste.

Keywords: edible and inedible food waste, diary study, food system crisis

References

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