

Sociodemographic determinants of household food waste in Greece

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Abstract

According to Eurostat, households are the primary contributors to food waste generation within the European Union (EU), accounting for 53% of wasted food across the EU food chain, a total of roughly 31 Mt, or an annual average of 70 kg/ca (Eurostat, 2023). National-wide estimates reveal that Greek households produce approximately 87 kg/ca per year. Apart from the quantification of food waste, understanding its underlying factors that drive food waste generation and prevention behaviors is crucial to developing effective strategies to address this problem (Abeliotis et al., 2016; Ilakovac et al., 2020). Sociodemographic characteristics are associated with influential factors that have a causal relationship with food waste. Prior research in Greece identified household size (Abeliotis et al., 2019) and educational levels of the respondent (Abeliotis et al., 2016) as significant determinants. However, recent relationships between sociodemographic factors and food waste, as assessed within the context of the EU legal framework, remain unexplored. This study aims to fill this research gap by presenting the most up-to-date evidence regarding the sociodemographic profiles of a national representative sample in Greece.

An online diary-based survey was conducted in 2021 with the aim of investigating food waste generation in Greece. Facebook advertisements were used for recruitment, targeting private households, while excluding collective housing and foreign diplomatic staff (EL.STAT., 2020). Stratified sampling across the thirteen NUTS2 regions was utilized to ensure geographical representativeness. Participants were instructed to weigh and submit daily electronic logs of their household food waste for a week. Adjusted generalized estimating equations (GEE) models accounting for inter- and intra-person potential predictors of daily food waste generation were employed to investigate the influence of sociodemographic factors. Covariates included sociodemographic variables, diaries' length, each diary day's characterization as typical or unusual, and time effects associated with the completion day. All hypotheses were two-sided, with the statistical significance level set at $p < 0.05$ and Bonferroni correction performed on multiple comparisons.

The final sample encompassed 1,133 households, totaling 3,231 individuals, and was fairly representative of the Greek population based on the NUTS2 regions and household size (EL.STAT., 2011). Nonetheless, due to the study's design, women and highly

educated individuals were overrepresented, whereas those aged 18–24 and 65 years or older, as well as people with lower education, were underrepresented.

Holding all other predictors constant, household size exhibited a negative association with per-capita food waste, but a positive correlation with per-household estimates. In particular, a one-person increase was linked with a 16% decrease in per-capita total food waste ($\beta=0.177\pm0.021$, $p<0.001$), while daily per-household total food waste increased by 20% ($\beta=0.182\pm0.019$, $p<0.001$). Notably, relationships in the same directions were observed for food parts that were edible (per-capita: $\beta=-0.186\pm0.035$, $p<0.001$; per-household: $\beta=0.177\pm0.033$, $p<0.001$) and inedible (per-capita: $\beta=-0.166\pm0.025$, $p<0.001$; per-household: $\beta=0.191\pm0.022$, $p<0.001$) at the time of disposal. Furthermore, the presence of children was weakly related to higher daily total food waste generation rates by nearly 11% (per-household: $\beta=0.102\pm0.054$, $p=0.057$) compared to households without children, with marginally greater levels of food parts that were edible at the time of disposal (per-capita: $\beta=0.142\pm0.083$, $p=0.085$; per-household: $\beta=0.161\pm0.086$, $p=0.061$). A borderline significant positive relationship was also found between mean annual household income and total food waste ($\beta=0.038\pm0.019$, $p=0.050$).

After adjusting for all remaining covariates, increasing diarists' age was associated with statistically significant increases in daily amounts of total food waste (per-household: $\beta=0.041\pm0.020$, $p=0.043$) and its inedible parts (per-capita: $\beta=0.086\pm0.027$, $p=0.001$; per-household: $\beta=0.090\pm0.027$, $p=0.001$). Additionally, male respondents recorded less total food waste (per-capita: $\beta=-0.322\pm0.062$, $p<0.001$; per-household: $\beta=-0.301\pm0.062$, $p<0.001$), as well as both inedible (per-capita: $\beta=-0.372\pm0.069$, $p<0.001$; per-household basis: $\beta=-0.342\pm0.070$, $p<0.001$) and edible (per-capita: $\beta=-0.276\pm0.113$, $p=0.015$; per-household: $\beta=-0.276\pm0.114$, $p=0.0019$) food parts, compared to women.

The relationships between residences' NUTS1 regions and diarists' educational level did not reach the levels of statistical significance.

In conclusion, beyond quantifying food waste, investigating sociodemographic factors is an essential prerequisite for implementing interventions tailor-made to the profiles of households and their members.

Keywords: food waste, household, sociodemographic factors

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