

Food systems are a key driver of climate change and poor health. A major food system shift over recent decades is increased ultra-processed food (UPF) consumption. High UPF consumption is linked with poor diet quality and chronic diseases, but the environmental impacts of UPFs are less explored. We used a nationally representative survey to evaluate the association between UPF consumption and greenhouse gas emissions (GHGEs) among US adults. This is a cross-sectional study with two pooled waves of data (2007-2008 and 2009-2010) from the National Health and Nutrition Examination Survey (NHANES). We divided participants into quintiles based on proportion of diet from UPFs (in grams) using mean of two-day dietary recall. Foods were matched with GHGEs using the database of Food Recall Impacts on the Environment for Nutrition and Dietary Studies (dataFRIENDS). Multivariate linear regression models were constructed to test the association between quintiles of UPF consumption and GHGEs. We found that consuming a greater proportion of diet from UPFs was associated with greater dietary GHGEs ($p_{\text{trend}} < 0.001$). The estimated emissions for the lowest quintile of UPF consumption were 1.19 (95% CI: 1.12, 1.27) kg CO₂-eq, compared to 1.71 (95% CI: 1.65, 1.77) kg CO₂-eq for the highest UPF quintile, showing a 43% increase. Descriptive analyses revealed associations between greenhouse gas emissions and sex, education, income, and race/ethnicity. These results suggest that policies to reduce UPFs could have health and environmental co-benefits, though more research is needed to understand the mechanisms behind why UPFs are associated with GHGEs.