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Title of Submission: Choice Architecture 2.0 using Nudge Plus: Embedding reflection in behavioural cues to promote low-carbon diets.

In this paper, I present results from an online survey experiment administered to 3074 individuals in the United Kingdom. I test the effectiveness of four behavioural toolkits, namely nudges, thinks, boosts and nudge pluses, to reduce the intended consumption of carbon-intensive foods. Participants were randomised into nine experimental vignettes and a control group where they were presented with different versions of a restaurant menu to place a hypothetical order for an online meal delivery. 1 in 100 participants randomly received a food voucher to place an actual order using a Restaurant Choice card. The menus were designed to test randomly the effect of two nudges: an environmentally sustainable opt-out default and an environmentally labelled menu with a traffic lighting scheme; one think: where participants reflected on an offer to pledge to a sustainable diet and how best to comply with it, before choosing from a control menu; two boosts: one where participants made implementation intention goals and another where participants had to memorise quick rules to consume sustainable diets, before choosing from the control menu; and four nudge pluses: where participants were made to think before, after or along with the default or traffic light nudge. I find all behavioural toolkits are significantly effective in reducing the intended consumption of carbon-intensive foods. Nudge pluses, which embed reflection in nudges, are the most effective: compared to the baseline control group, the nudge plus experimental vignettes reduce carbon emissions associated with intended dietary choices by 59 percent. Boosts and nudges reduce it by 45 percent. I further find that the effectiveness of the nudge plus, depends on the order of proximity of the plus to the nudge, such that reflection is most effective when it precedes the delivery of the nudge. There are also gains in efficacy from an increase in the magnitude of reflection embedded in the nudge. Using a partial proportional odds model, I find the nudge plus experimental vignette, where the think precedes the default nudge, is unique in reducing the odds of consumption of ruminant meat and dairy products. I find heterogeneity in average treatment effects by participants' dietary styles and levels of intrinsic motivation. I do not find any evidence of negative behavioural spillovers, measures as contributions to a charitable donation task. This experiment is the first randomised, systematic evaluation of different behavioural tools in mitigating dietary emissions. In that, I show that embedding reflection in behavioural cues like nudges can deliver better pro-environmental outcomes. I call for more experimental tests of nudge plus for external validity of these results using actual behaviour in the field.

Key Words: *Sustainable diets; Nudge; Think; Boost; Nudge Plus*