

## Replication of Isley et al. 2016

“Online purchasing creates opportunities to lower the life cycle carbon footprints of consumer products”

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<https://www.pnas.org/content/113/35/9780>

*The original paper includes several experiments. We randomly chose the Lodging experiment. In this within-subject experiment, participants view four rental options varying in price, visual attractiveness of the image of the rental, and the presence or absence of a leaf icon that denotes an environmentally friendly rental option. Participants' willingness to pay – the average amount that they would pay for a particular rental option – is then estimated using a random utility model. The presence of a leaf increases willingness to pay compared to not having a leaf on the rental option.*

**Hypothesis to replicate and bet on:** Indicating the environmental friendliness of an Airbnb rental through a leaf increases willingness to pay compared to having no leaf on the rental. The authors test the above hypothesis with a  $z$ -test ( $z = 3.05$ ,  $p = 0.002$ ); p. 9783.

**Criteria for replication:** The criteria for replication are an effect in the same direction as the original study and a  $p$ -value  $< 0.05$  in a two-sided  $z$ -test.

**Power analysis:** The original study had a sample of 355 participants. The standardized effect size (Cohen's  $d$ ) was  $d = 0.162$ . To have 90% power to detect 67% of the original effect size, a sample size of  $n = 901$  is required.

**Sample:** Only US participants not using tablets or mobile devices could participate in the experiment. We will follow these inclusion criteria and make sure that participants only participate once from the same account in this specific study, and we will only recruit participants with a HIT approval rate of 95% or higher. We will also check all IP addresses via <https://www.ipqualityscore.com/>; and we will remove any participants where one or more of the following is true: fraud score  $\geq 85$ ; TOR = True; VPN = True; Bot = True; abuse velocity = high. The replication sample size is the sample size after any exclusions of participants.

**Materials:** We will use the same material as in the original study, kindly provided by the original authors. In particular, we will use the same *PsiTurk* code used to create the experiment.

**Procedure:** We will follow the procedures of the original study as closely as possible. The following summary of the experimental procedure is therefore largely based on the description of the experiment in the article (p. 9783) and the Supplementary Information (pp. 2–3).

Participants will first be shown a Captcha, and will thereafter provide informed consent. After this we will include an attention check that participants will need to pass to continue to the study. This attention check is in addition to any other potential attention check(s) used in the original study. Participants will be exposed to four different choice situations, each involving four accommodations from Airbnb. In each situation, accommodations will vary in price (\$80, \$90, or \$100), visual attractiveness (bad, average, good), and the presence or absence of a leaf icon that

signifies environmental friendliness. After making their four choices, participants will see a mock confirmation page where they will be asked to examine an Airbnb invoice of \$96 plus a service fee of \$12. In addition, they will also be able to add carbon offsets with a random price of \$0.50, \$1.50, or \$3.00.

**Analysis:** The analysis will be performed as in the original paper. The analysis code was kindly provided by the original authors. In particular, we will estimate a random utility model where individual  $i$  has the following utility function for alternative  $j$  with price  $p$ :

$$U_{ij} = \beta_1 p + \beta_2 I_{avg1} + \beta_3 I_{avg2} + \beta_4 I_{good} + \beta_5 I_{leaf} + \epsilon_{ij}$$

where  $\epsilon_{ij}$  is the random error term;  $I_{avg1}$ ,  $I_{avg2}$ , and  $I_{good}$  dummies indicating visual attractiveness; and  $I_{leaf}$  is an indicator for the presence of the leaf. This will be estimated using multinomial logit and we will perform a  $z$ -test on the coefficient of the leaf icon to test the hypothesis of interest.

**Subject payments:** We are standardizing payments across all replications so that studies have a certain show-up fee depending on the expected length of the study, with an hourly wage from the show-up fee of \$8 and a minimum payment of \$1 (for studies with incentive payment we use the same incentive payment as in the original study; and this payment is paid in addition to the show-up fee). If we have problems recruiting, we will increase the show-up fee.