

Supplementary Materials

S1. Additional representations of the effects of 31DAYS

The following Figures report the estimates of the Average Treatment Effect on the whole sample and on sample sub-groups based on the phase of change (Early phases and Late phases). The accompanying Tables also report the related model estimates, together with the model goodness-of-fit, measured via the Adjusted R^2 statistics. We start by reporting elements based on our research question RQ1 on the effect on the intention to use the car and the other transport modes, and then we report the elements about our research question RQ2 on the effect on the ownership of cars, of e-bikes, and subscriptions to public transport and car-sharing.

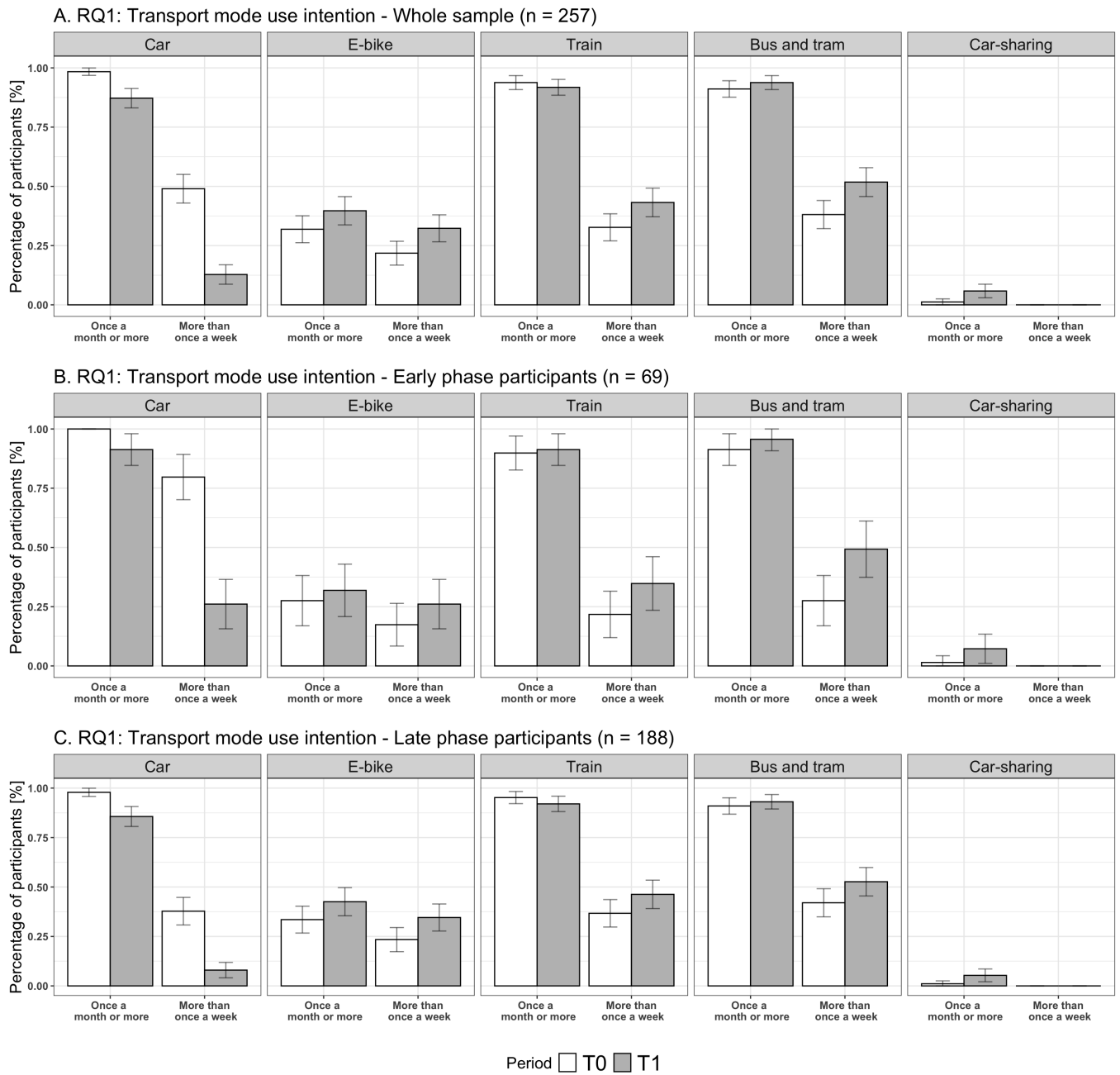


Figure S1: Research Question RQ1: effect on transport mode use intention.

Table S1: Summary of model results — RQ1: transport mode use intention.

| RQ1: transport mode use intention [% respondents] | | | T0 | T1 | ATE | p-value | Adj R ² |
|---|-----------------------|--------------|-------|-------|-----------|---------|--------------------|
| Car use | Once a month or more | Whole sample | 0.984 | 0.872 | -0.113*** | < 0.001 | 0.048 |
| | | Early phases | 1.000 | 0.913 | -0.087** | 0.044 | 0.047 |
| | | Late phases | 0.979 | 0.856 | -0.122*** | < 0.001 | |
| | More than once a week | Whole sample | 0.490 | 0.128 | -0.362*** | < 0.001 | 0.152 |
| | | Early phases | 0.797 | 0.261 | -0.536*** | < 0.001 | 0.245 |
| | | Late phases | 0.378 | 0.080 | -0.298*** | < 0.001 | |
| E-bike use | Once a month or more | Whole sample | 0.319 | 0.397 | 0.078* | 0.066 | 0.005 |
| | | Early phases | 0.275 | 0.319 | 0.043 | 0.593 | 0.007 |
| | | Late phases | 0.335 | 0.426 | 0.090* | 0.067 | |
| | More than once a week | Whole sample | 0.218 | 0.323 | 0.105*** | 0.007 | 0.012 |
| | | Early phases | 0.174 | 0.261 | 0.087 | 0.248 | 0.014 |
| | | Late phases | 0.234 | 0.346 | 0.112** | 0.015 | |
| Train use | Once a month or more | Whole sample | 0.938 | 0.918 | -0.019 | 0.394 | 0.000 |
| | | Early phases | 0.899 | 0.913 | 0.014 | 0.742 | 0.000 |
| | | Late phases | 0.952 | 0.920 | -0.032 | 0.232 | |
| | More than once a week | Whole sample | 0.327 | 0.432 | 0.105** | 0.014 | 0.010 |
| | | Early phases | 0.217 | 0.348 | 0.130 | 0.122 | 0.021 |
| | | Late phases | 0.367 | 0.463 | 0.096* | 0.054 | |
| Bus and tram use | Once a month or more | Whole sample | 0.911 | 0.938 | 0.027 | 0.244 | 0.001 |
| | | Early phases | 0.913 | 0.957 | 0.043 | 0.317 | 0.000 |
| | | Late phases | 0.910 | 0.931 | 0.021 | 0.437 | |
| | More than once a week | Whole sample | 0.381 | 0.518 | 0.136*** | 0.002 | 0.017 |
| | | Early phases | 0.275 | 0.493 | 0.217*** | 0.010 | 0.022 |
| | | Late phases | 0.420 | 0.527 | 0.106** | 0.037 | |
| Car-sharing use | Once a month or more | Whole sample | 0.012 | 0.058 | 0.047*** | 0.004 | 0.014 |
| | | Early phases | 0.014 | 0.072 | 0.058* | 0.063 | 0.011 |
| | | Late phases | 0.011 | 0.053 | 0.043** | 0.025 | |
| | More than once a week | Whole sample | 0 | 0 | 0.000 | NaN | NaN |
| | | Early phases | 0.000 | 0.000 | 0.000 | NaN | NaN |
| | | Late phases | 0.000 | 0.000 | 0.000 | NaN | |

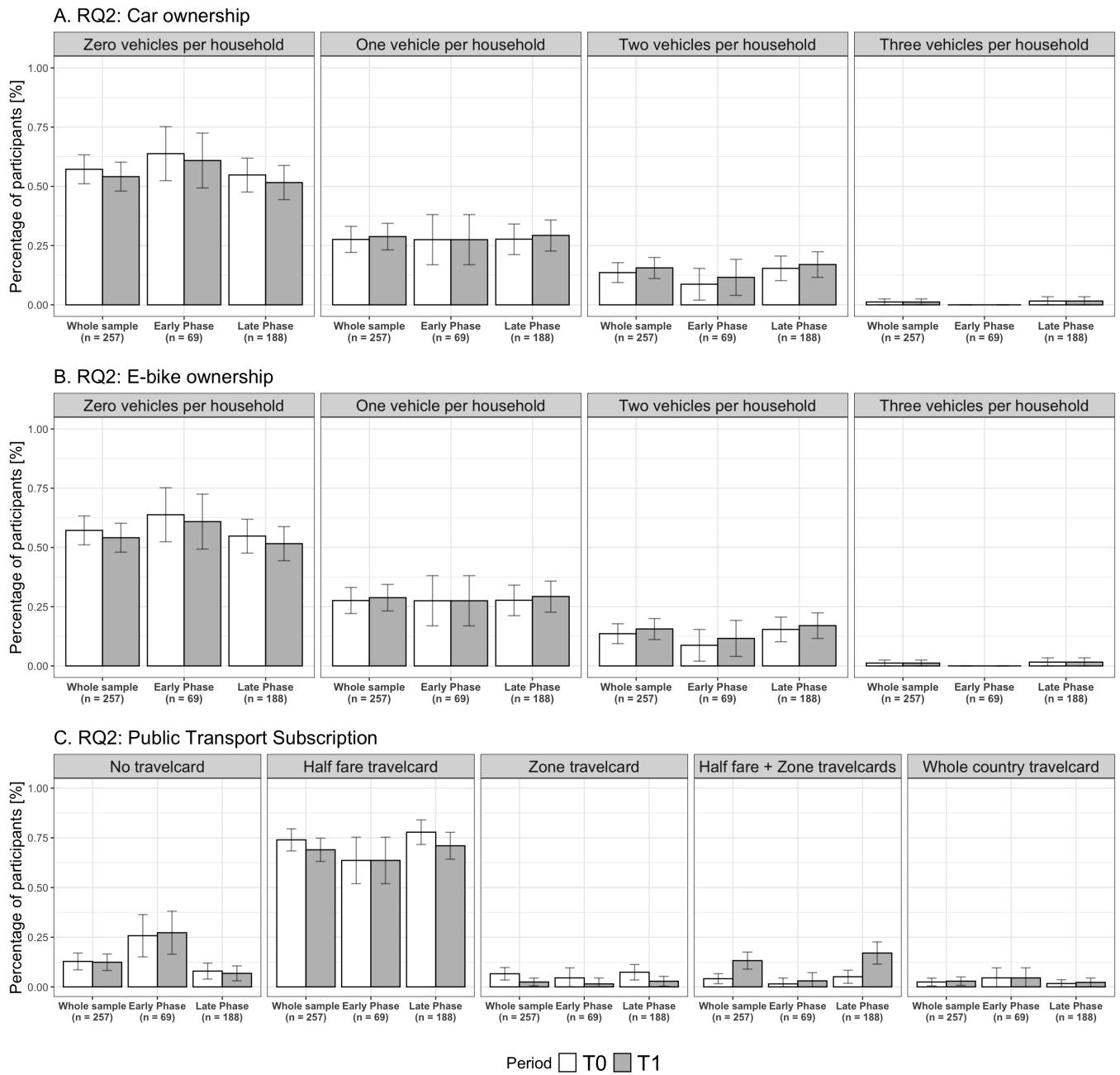


Figure S2: Research Question RQ2: effect on transport mode ownership.

Table S2: Summary of model results — RQ2: transport mode ownership.

| RQ2: transport mode ownership [% respondents] | | | T0 | T1 | ATE | p-value | Adj R ² |
|---|-----------------------------|--------------|--------|--------|----------|---------|--------------------|
| Car | Zero per household | Whole sample | 0.000 | 0.023 | 0.023*** | 0.013 | 0.009 |
| | | Early phases | 0.000 | 0.029 | 0.029 | 0.113 | 0.007 |
| | | Late phases | 0.000 | 0.021 | 0.021* | 0.055 | |
| | One per household | Whole sample | 0.875 | 0.872 | -0.004 | 0.895 | 0.000 |
| | | Early phases | 0.0841 | 0.0826 | -0.014 | 0.798 | 0.000 |
| | | Late phases | 0.088 | 0.088 | < 0.001 | 1.000 | |
| | Two per household | Whole sample | 0.121 | 0.101 | -0.019 | 0.483 | 0.001 |
| | | Early phases | 0.145 | 0.130 | -0.014 | 0.786 | 0.003 |
| | | Late phases | 0.112 | 0.090 | -0.021 | 0.512 | |
| | Three per household | Whole sample | 0.004 | 0.004 | < 0.001 | 1.000 | 0.000 |
| | | Early phases | 0.014 | 0.014 | < 0.001 | 1.000 | 0.005 |
| | | Late phases | 0.000 | 0.000 | < 0.001 | 1.000 | |
| E-bike | Zero per household | Whole sample | 0.572 | 0.541 | -0.031 | 0.479 | 0.000 |
| | | Early phases | 0.638 | 0.609 | -0.029 | 0.732 | 0.002 |
| | | Late phases | 0.548 | 0.517 | -0.031 | 0.534 | |
| | One per household | Whole sample | 0.276 | 0.288 | 0.011 | 0.732 | 0.000 |
| | | Early phases | 0.275 | 0.275 | < 0.001 | 1.000 | 0.000 |
| | | Late phases | 0.277 | 0.293 | 0.016 | 0.662 | |
| | Two per household | Whole sample | 0.136 | 0.156 | 0.019 | 0.533 | 0.000 |
| | | Early phases | 0.087 | 0.116 | 0.029 | 0.630 | 0.001 |
| | | Late phases | 0.154 | 0.170 | 0.0016 | 0.662 | |
| | Three per household | Whole sample | 0.012 | 0.012 | < 0.001 | 1.000 | 0.000 |
| | | Early phases | 0.000 | 0.000 | < 0.001 | 1.000 | 0.000 |
| | | Late phases | 0.016 | 0.016 | < 0.001 | 1.000 | |
| Public transport travelcard | No travelcard | Whole sample | 0.128 | 0.124 | -0.004 | 0.891 | 0.000 |
| | | Early phases | 0.257 | 0.272 | 0.015 | 0.787 | 0.060 |
| | | Late phases | 0.079 | 0.068 | -0.011 | 0.741 | |
| | Half-Fare travelcard | Whole sample | 0.739 | 0.690 | -0.050 | 0.228 | 0.001 |
| | | Early phases | 0.636 | 0.636 | < 0.001 | 1.000 | 0.009 |
| | | Late phases | 0.778 | 0.710 | -0.068 | 0.155 | |
| | Zone travelcard | Whole sample | 0.066 | 0.024 | -0.041** | 0.029 | 0.008 |
| | | Early phases | 0.045 | 0.015 | -0.030 | 0.402 | 0.006 |
| | | Late phases | 0.073 | 0.028 | -0.045** | 0.041 | |
| | Half-Fare + Zone travelcard | Whole sample | 0.041 | 0.132 | 0.091*** | < 0.001 | 0.024 |
| | | Early phases | 0.015 | 0.030 | 0.015 | 0.752 | 0.046 |
| | | Late phases | 0.051 | 0.170 | 0.119*** | < 0.001 | |
| | Whole country travelcard | Whole sample | 0.024 | 0.028 | 0.004 | 0.779 | 0.000 |
| | | Early phases | 0.045 | 0.045 | < 0.001 | 1.000 | 0.001 |
| | | Late phases | 0.017 | 0.022 | 0.005 | 0.742 | |

S2. Seasonal effects and heterogeneity analyses per cohort

To test hypothesis *H1b_Cohort* stating that no differential effects on e-bike use occur on varying the cohort (namely, that no seasonal effect occurs on e-bike use on varying the temporal period in which the cohort members experienced 31DAYS), we run a linear probability model that includes a term representing the user’s cohort, and an interaction term representing the difference in the effect between the reference cohort (e.g. cohort 1) and the other cohorts. The model equation is as follows:

$$use_{it} = \beta_0 + \beta_1 post_{it} + \beta_2 cohort_i + \beta_3 post_{it} \times cohort_i + c_i + \epsilon_{it} \quad (S1)$$

where cohort represents the respondent’s sub-group (cohort 1, cohort 2, cohort 3, cohort 4). The β_1 coefficient represents the average treatment effect (ATE) on the reference sub-group. The β_3 coefficients attached to the interaction term represent the conditional average treatment effect (CATE), namely the difference in the effect between the reference sub-group and the other sub-groups. If The β_3 coefficients are statistically significant, there is a difference in the treatment effect between the reference cohort and the other cohort — namely, there is a seasonal effect. Otherwise, we exclude presence of a seasonal effect.

By running the above models for each cohort on 31DAYS participants and by using cohort 1 as a reference group, we obtained the results reported in Table S3. They show no statistically significant differences between cohorts in the effect on e-bike use, thus confirming our expectations and *H1b_Cohort*, and confirming our choice to pool all cohort members into a single group and perform analyses on the whole sample of participants.

Note the similar results lacking statistical significance also appear by running the same model for all the other transport modes, never showing changes that are significant at the 95% level or more.. Presence of differences in the effect on car-sharing on varying the cohort are however most likely not attributable to seasonal effects, but simply to the very low use of car-sharing before 31DAYS and the corresponding low intention of using it after 31DAYS. Namely, those differences can be explained by considering presence in cohort 1 of participants who, before 31DAYS, sometimes used car-sharing services, and lack of such participants in cohort 4.

Table S3: Heterogeneity of the effect of participation in 31DAYS, per cohort.
Heteroskedasticity-robust standard errors SE are reported in brackets.

| Transport mode use, Sample | | Once a month or more | | | | More than once a week | | | |
|-------------------------------|-----------------|----------------------|---------|--------------------------------|---------|-----------------------|---------|-------------------|---------|
| | | ATE (SE) | p-value | CATE (SE) | p-value | CATE (SE) | p-value | CATE (SE) | p-value |
| Car | Cohort 1 (ref.) | -0.115* (0.063) | 0.068 | — | — | -0.346*** (0.117) | 0.003 | — | — |
| | Cohort 2 | — | — | -0.021 (0.073) | 0.774 | — | — | -0.063 (0.134) | 0.638 |
| | Cohort 3 | — | — | -0.004 (0.080) | 0.960 | — | — | -0.042 (0.134) | 0.755 |
| | Cohort 4 | — | — | 0.036 (0.075) | 0.626 | — | — | 0.056 (0.138) | 0.682 |
| E-bike | Cohort 1 (ref.) | 0.076 (0.109) | 0.483 | — | — | 0.000 (0.089) | 1.000 | — | — |
| | Cohort 2 | — | — | 0.048 (0.130) | 0.711 | — | — | 0.148 (0.109) | 0.178 |
| | Cohort 3 | — | — | -0.032 (0.135) | 0.812 | — | — | 0.090 (0.111) | 0.421 |
| | Cohort 4 | — | — | -0.024 (0.137) | 0.858 | — | — | 0.105 (0.120) | 0.383 |
| Train | Cohort 1 (ref.) | 0.038 (0.095) | 0.686 | — | — | 0.000 (1.140) | 1.000 | — | — |
| | Cohort 2 | — | — | -0.061 (0.099) | 0.537 | — | — | 0.114 (0.159) | 0.474 |
| | Cohort 3 | — | — | -0.053 (0.108) | 0.622 | — | — | 0.104 (0.161) | 0.518 |
| | Cohort 4 | — | — | -0.077 (0.104) | 0.455 | — | — | 0.132 (0.159) | 0.408 |
| Bus and Tram | Cohort 1 (ref.) | 0.038 (0.065) | 0.554 | — | — | 0.115 (0.139) | 0.406 | — | — |
| | Cohort 2 | — | — | -0.016 (0.074) | 0.831 | — | — | 0.032 (0.158) | 0.838 |
| | Cohort 3 | — | — | 0.021 (0.088) | 0.809 | — | — | 0.034 (0.163) | 0.835 |
| | Cohort 4 | — | — | -0.038 (0.075) | 0.606 | — | — | 0.003 (0.160) | 0.985 |
| Car-sharing | Cohort 1 (ref.) | 0.154* (0.087) | 0.077 | — | — | NaN | NaN | — | — |
| | Cohort 2 | — | — | -0.097 (0.090) | 0.282 | — | — | NaN | NaN |
| | Cohort 3 | — | — | -0.109 (0.090) ⁷ | 0.228 | — | — | NaN | NaN |
| | Cohort 4 | — | — | -0.154* (0.091) | 0.090 | — | — | NaN | NaN |

* p-value ≤ 0.10 ; ** p-value ≤ 0.05 ; *** p-value ≤ 0.01 .

S3. Declaration of competing interest

All the authors declare that they have no competing interests, and the manuscript is approved by all authors for publication. The work described is original research that has not been published previously, and not under consideration for publication elsewhere, in whole or in part. All the authors listed have seen and agreed with the contents of the manuscript that is enclosed and there is no competing interest to report.