Satisfaction, willingness to pay, and ridership when buses are electrified
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ReadMe file on data and code prepared in March 2026

Note: Stata do-files and Matlab m-files can be read as text files in any text editor. Comments in these code files refer specifically to Tables, Figures, footnotes, etc., by number, in the article and in the online appendix where results are reported. Run times for script files are approximately 2-10 minutes. Please see below.

The following files containing source (raw) data and computer code are described in what follows:

Zip file or folder: study 1

(i) bus stop survey 20210420.xlsx (source: authors, collected via research assistants)
(ii) bus characteristics 20210219.xlsx (source: Land Transport Authority)
(iii) bus characteristics 20210528.xlsx (source: Land Transport Authority)
(iv) Stata do-file bus_stop_survey.do (code)
(v) Stata data file sample_bus_stop.dta (this file can be generated from raw data files (i) to (iii) and code (iv), yet is published for convenience)
(vi) bus stop after de-electrification survey.xlsx (source: authors, collected via research assistants)
(vii) bus_stop_deelectrification_survey.do (code)
(viii) rail station survey.xlsx (source: authors, collected via research assistants)
(ix) rail_station_survey.do (code)

File survey instruments.pdf contains all bus stop and rail station survey instruments.

Script file (iv) bus_stop_survey.do runs in Stata version 16 or higher. The user may need to manually change the working directory to the folder in which h/she will save the source data files. This do-file consists of several programs (functions) and commands that read raw data files (i) to (iii) and then generate all the results for study 1, bus stop survey. **To assist the user, the do-file is commented throughout, including references to numbered Tables, Figures, footnotes, etc. that show results.**

Similarly, **script file (vii) bus_stop_deelectrification_survey.do** reads raw data file (vi) and replicates the output shown in Tables A.13 and A.14, bus stop survey post 944 e-bus removal; and **script file (ix) rail_station_survey.do** reads raw data file (viii) and replicates the output shown in Table A.17, rail station survey. **Both do-files are commented throughout.**

Zip file or folder: study 2

(x) WTPelectricbus_ChoiceExpt.txt (source: authors, collected under contract via Blackbox Research)
(xi) VOT_ChoiceExpt.txt (source: authors, collected under contract via Blackbox Research)
(xii) Matlab m-file ChoiceExpt_WTPelectricbus.m (code)
(xiii) ChoiceExpt_VOT.m (code)
(xiv) 12 auxiliary m-files in an embedded matlab_functions folder (code)
(xv) WTP_Table_4_bottom.do (code)
(xvi) EbusChoiceProb_Table_4_middle.do (code)

Text file (x) WTPelectricbus_ChoiceExpt.txt contains source data from the first choice experiment (Fig. 3, choice situations 1 and 2 as explained in Section 4 of the manuscript). Text file (xi) VOT_ChoiceExpt.txt contains source data from the second choice experiment (Fig. 4, choice situations 3 and 4, Section 4).

Script files (xii) ChoiceExpt_WTPelectricbus.m and (xiii) ChoiceExpt_VOT.m run on Matlab 2025a or higher. As before, the user may need to manually change the working directory to the folder in which h/she will save the raw data file that each script file reads WTPelectricbus_ChoiceExpt.txt or VOT_ChoiceExpt.txt, respectively. **The m-files are commented throughout**, including references to Table 4's reported coefficient and standard error estimates.

Script file (xii) ChoiceExpt_WTPelectricbus.m estimates parameters, the probability of choosing an electric bus, and the willingness-to-pay (WTP) for an electric bus trip in terms of ride. The user selects a model specification # = 1 to 5 to replicate the estimates of Table 4, panel A (e.g., see variables Result_MNL for specification 1 and Result_ML for specifications 2-5; also see the log file stated below). Outputs are:

1. results_EbusChoice_spec#.csv: Parameter estimates
2. WTPinMinutes_data_spec#.csv: WTP in minutes (per resident-random draw)
3. WTPinMinutes_data_boot_spec#.csv: Bootstrap draws for WTP (N=100)
4. cfprobEbus_spec#.csv: Choice probabilities for electric bus
5. cfprobEbus_boot_spec#.csv: Bootstrap draws for choice probability
6. EbusChoice_spec#.mat: Saved workspace

Because specification 1 assumes common coefficients for all individuals, WTP is calculated via the Delta method.

Script file (xiii) ChoiceExpt_VOT.m estimates parameters and the value of time (VOT) in cents/min. Similarly, the user selects a model specification # = 1 to 5 to replicate the estimates of Table 4, panel B (again, see variables Result_MNL for specification 1 and Result_ML for specifications 2-5; again, see the log file stated below). Outputs are:

1. results_RegularExpressChoice_spec#.csv: Parameter estimates
2. VOT_data_spec#.csv: VOT (per resident-random draw)

3. VOT_data_boot_spec#.csv: Bootstrap draws for VOT (N=100)
4. RegularExpressChoice_spec#.mat: Saved workspace

Both script files use functions/m-files (xiv) from the embedded "matlab_functions" folder, including:
- Data Manipulation: ColMultiplication.m, diffx.m, makedraws.m
- Optimization: loglik.m, check_opt.m
- Inference: varcov.m, randomcoefVCOVSE.m
- Bootstrapping: drawcoefficients.m, trans.m

The script files also post output to an embedded folder study 2\results, which is initially empty. The user may need to download some Add-Ons such as Adaptive Robust Numerical Differentiation (by John D'Errico). Credits to Zhihao Han for writing the Matlab code which produces the estimates of Table 4. Credits also to Pierre Dubois, Rachel Griffith, and Martin O'Connell (The effects of banning advertising in junk food markets, Review of Economic Studies, vol. 1, n. 1, January 2018) for publishing their replication package, from which much code in the "matlab_functions" folder is adapted.

Script files (xv) WTP_Table_4_bottom.do and **(xvi) EbusChoiceProb_Table_4_middle.do** replicate the results shown in the bottom and the middle of Table 4.

Zip file or folder: study 3

(xvii) bus_ridership.do (code)
(xviii) sampleBusLineYearWeek.dta (statistics aggregated by the authors from proprietary raw data files provided by the Land Transport Authority)

We are publishing the code we used**.** As noted in the data and code availability statement, "Bus ridership data (study 3) are proprietary and can be accessed through the LTA." Thus, most programs of **script file (xvii) bus_ridership.do** are commented out (readData, monthlyAggregation, weeklyAggregation, descriptives, estimationYearMonth, estimationCommuterType, estimationCardLevel, prepareYearWeek).

However, to allow replication of study 3's leading table of estimates (Table 7), aggregated statistics at the bus line by week-of-sample level are found in sampleBusLineYearWeek.dta. These aggregated data (xviii) are generated by bus_ridership.do's program prepareYearWeek, and are used for estimation by program estimationYearWeek, which the user can run to replicate the results of Table 7 (and some other specifications that are implemented on sampleBusLineYearWeek.dta).

From the JAERE Replication Package Checklist: A list of all output files associated with results that appear in the paper and appendices as well as the name and location of the code file that produces each

Log file study_1.log in zip file or folder \study 1 contains the output log from running study 1's script files (iv), (vii), and (ix) in sequence. These do-files are commented throughout and the line numbers below refer to the line number in the respective do-file:

(iv) bus_stop_survey.do

- Line 280: Fig. A.3
- Line 311: Table A.2
- Line 347: Tables A.10 and A.11
- Line 430: Table A.12
- Line 451: Table A.9
- Line 468: Tables 2, A.3, A.4, A.5, A.6, and A.7
- Line 474: Table A.6
- Line 486: Footnote 7
- Line 496: Table 2 (e.g., search "Table 2" in the log file for Table 2 estimates)
- Line 503: Table A.3
- Line 507: Table A.4
- Line 523: Table A.5
- Line 526: Table A.7
- Line 533: Footnote 3
- Line 540: Table A.8
- Line 553: Fig. A.4
- Line 592: Fig. A.5

(vii) bus_stop_deelectrification_survey.do

- Line 50: Table A.14

(ix) rail_station_survey.do

- Line 124: Table A.17

The embedded **folder "results" in zip file or folder \study 2** contains output produced by script files (xii), (xiii), (xv), and (xvi) (these do-files and m-files are commented throughout). We are sharing 15 output files but other larger files (with estimates by resident-random sample, and by bootstrap sample) can be generated from these script files.

Moreover, **log file study 2.txt in zip file or folder \study 2** records output to the command window from running script files (xii) and (xiii) for specifications 1 to 5 in sequence. We also print variables Result_MNL for specification 1 and Result_ML for specifications 2-5 for a quick verification of Table 4 estimates.

Log file study_3.log in zip file or folder \study 3 contains the output log from running study 3's script file (this do-file is commented throughout):

(xvii) bus_ridership.do

- Line 222: Table 5

Line 247: Fig. A.11
Line 311: Fig. 5
Line 345: Fig. A.7
Line 362: Fig. A.8
Line 401: Fig. A.9
Line 446: Fig. A.10
Lines 525, 619, 722, 734, 747, 752, 774, 801, 879, 908: Table A.15
Lines 633, 661, 698: Table 8
Line 792: Fig. A.6
Lines 838, 853, 906: Table 7 including caption (e.g., search “Table 7” in the log file for Table 7 estimates)
Line 847: Footnote 15
Line 872: Table 9