Replication Overview for Bjorkegren, Duhaut, Nagpal and Tsivanidis (2025)

The main paper has 8 tables and 3 figures. The appendix has 30 tables and 4 figures.

To run the replication package, the following changes need to be made:

1. Change paths in the following files so that the repo works locally:
    a. /lib/configurePaths.py
    b. Make_01_dirSetup.sh
    c. Make_02_run.sh
2. There may be package dependencies in the code for both Stata and Python. We've outlined some package requirements in Stata in the code.
3. To run the full replication package, you'll need Stata, Python, R and Matlab. The replication runs using:
    a. Stata: StataMP 18.5
    b. Matlab 2024b
    c. Python 3.8.19
    d. R 4.4.1

We outline the files used to generate the figures and tables in the main text and the appendices. File names are ordered to indicate the sequence in which they should run.

1. To replicate the paper run the following files:
    a. Make_01_dirSetup.sh
    b. Make_02_run.sh
2. Make_01_dirSetup.sh sets up the directory structure required to store outputs
3. File 00_setup.do installs all stata packages required for replication.
4. Make_02_run.sh runs the following files and produces the outlined outputs:
    a. 01_motorparkFinal.do: generates Tables 2, 3, 5, S3, S13-18, S26, S28 and Figs S6 (panels a, b and c)
        i. In Tab S26, the significance levels have been manually input since Stata doesn't allow for a direct export.
    b. 02_driverFinal.do: generates Table 4, 6, Tab S8-S10, S19
    c. 03_prepModelInputs.do: Tab S27
        i. For table s27: only one column appears in the final paper
    d. 04_quantitativeFinal.m – Tab 8, S29 and S30
        i. Note tab S29 is a replication of Table 8 with wild inference (i.e. different standard errors).
            1. Line 584 outputs the point estimates in the main table. Line 650+ outputs the confidence intervals. The first set correspond

> to the clustered SE in Table 8 and the second are the wild confidence intervals in Table S29.

  e. 05_descriptives_driver.do: generates Tables S2, S6, S7

  f. 06_descriptives_mpd.do: generates Figure 1, and Tables 1, Tab S11-S12.

  g. 07_priceChangePlots.py – generates Figures S1 and S2.

  h. 08_priceElasticityRegression.py - Tab S1, S4 and S20.

    i. Table S1 is tablePrice_dynamic_combined_triploglevel_aroundDiscontinuity1.tex

    ii. Tab S4 is tablePrice_beforeAfter_triploglevel_window14.tex

    iii. Tab S20 tablePrice_beforeAfter_busloglevel_window14.tex

  i. 09A_summaryStatistics.py – Tab S21

  j. 10_MLEstimation.py – Tables 7, S5, S22, S23, S25

  k. 11B_checkinShift.r – Tab S24

  l. 12_google_mobility_data.do: generates Figure S3

5. The maps in Figure 1 are generated in paper_maps.qgz and can be replicated as follows:

  a. Run 13_maps_tsc.do

  b. Maps/generated has all the output shapefiles generated.

  c. Maps/output has all the maps that are generated in the layout manager in paper_maps.qgz.

Data Access Statement:

- We certify that the authors of the manuscript have legitimate access to and permission to use the data used in this manuscript.

- All the following data files have been collected by the authors, and will be made publicly available in the World Bank Development Data Hub after the publication of this paper in a journal. Data was collected from June 2020 to December 2023.

  o raw

    ▪ all_nodes_clean_coords.csv

    ▪ alt_spillovers_final_bilateral.dta

    ▪ BRI_RouteMerge_MasterFile.dta

    ▪ bus_departures_survey_panel_R12plus.csv

    ▪ bus_stop_survey_R12plus.dta

    ▪ bus_swipes_per_day_wimtSample.csv

    ▪ cancelled_AnyPlan_xwalk.dta

    ▪ cancelled_endsars_xwalk.dta

    ▪ cancelled_planNotOpen_xwalk.dta

    ▪ cleanedBaselineSurveyData.csv

- cleanedEndlineSurveyData.csv
- cleanedWaitGameData_MainSpecFiltered.csv
- cleanedWaitGameData.csv
- danfo_bri_route_intersections.csv
- driverSurveyDanfoRoutes_wide.dta
- main_panel.dta
- main_long_panel.dta
- mpd_data_clean_route_level.dta
- mpd.dta
- observation_survey_panel_mpd_R12plus_busLevel.dta
- preliminary_list_0_first_no_PII.dta
- StopInfo.csv
- tbl_HH_Trips.csv
- treatment_panel.dta
- uf_registration_fee.dta
- google_trip_char.csv
- google_trips_data.csv
- google_trips_routesToMatch.csv
  - supp/
    - all_bri_lengths.csv
    - all_danfo_bri_lengths.csv
    - bri_lengths_open_90_days.csv
    - CowryNamesToMerge_Cleaned.csv
    - CowryNamesToMerge.csv
    - endpoint_departures_2021.csv
    - eticketing_datesFound.csv
    - eticketing_dateToFind.csv
    - Nura_To_Check_Additional_June6.xlsx
    - reg_weights.dta
    - TreatedRouteStats_wComments.xlsx
    - TreatedRouteStats.xlsx
  - maps/raw/
    - lga_boundaries.geojson
    - xwalk_compiled_GN.xlsx
- The following data files were shared with the authors by the Lagos Metropolitan Area Transport Authority (LAMATA) with the research team. Data was shared only the study purposes, and it is not available for external users. (received between June 2021 and Dec 2023)

- o raw/
  - all_bri_fares_2021.csv
  - all_bri_fares.csv
  - bri_fares_2021.csv
  - consolidated_dep_plan.dta
  - eticketing_fares.dta
  - clean_bri_plans.dta
- o raw/eticketing/
  - eticketing_2023_01.parquet
  - eticketing_2023_02.parquet
  - eticketing_2023_03.parquet
  - eticketing_2023_04.parquet
  - eticketing_2023_05.parquet
  - eticketing_2023_06.parquet
  - eticketing_2023_07.parquet
  - eticketing_2023_08.parquet
  - eticketing_2023_09.parquet
  - eticketing_2023_10.parquet
  - eticketing_2023_11.parquet
  - eticketing_2023_12.parquet
  - eticketing_2024_01.parquet
  - eticketing_2024_02.parquet
  - eticketing_2024_03.parquet
  - eticketing_2024_04.parquet
  - eticketing_2024_05.parquet
  - eticketing_2024_06.parquet
- o raw/eticketing/eticketing_2021_22/
  - eticketing_2021_01.parquet
  - eticketing_2021_02.parquet
  - eticketing_2021_03.parquet
  - eticketing_2021_04.parquet
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- eticketing_2022_08.parquet
- eticketing_2022_09.parquet
- eticketing_2022_10.parquet
- eticketing_2022_11.parquet
- eticketing_2022_12.parquet

- maps/raw/
    - BRI_routes.shp

- raw/Global_Mobility_Report.csv was downloaded from Google COVID-19 Community Mobility Reports (link: https://www.google.com/covid19/mobility/index.html?hl=en, last accessed: April 29, 2025).

Shapefiles:

- The following shapefile was an output supplied by Where Is My Transport (WIMT) wherein they mapped all privately operated transit routes in Lagos. Data was procured for study purposes. (made available Oct, 2022)
    - maps/raw/Lagos_GeoPackage_V2.gpkg
    - maps/raw/danfo_wimt.shp is the transit trips layer of the geopackage above.
- GHS data used for the project is publicly available (link: https://jeodpp.jrc.ec.europa.eu/ftp/jrc-opendata/GHSL/GHS_POP_GLOBE_R2023A/GHS_POP_E2020_GLOBE_R2023A_54009_100/V1-0/, last accessed Jul 14, 2025)
    - maps/raw/GHS_POP_E2020_GLOBE_R2023A_54009_100_V1_0_R9_C19.tif covers Lagos, and is clipped to match the extent of Lagos (lga_boundaries) in clipped_ghs_pop.tif.
- The following shapefiles were shared by LAMATA for study purposes, and will not be available for external users. (shared Jun, 2021)
    - maps/raw/BRI_routes.shp

- maps/generated/Treat_all.shp is the subset of treated BRI routes that are in our sample.