Women-only Option in a Peer-to-Peer Marketplace: the Case of Long-distance Carpooling

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Motivation

Source: https://www.tokyoweekender.com/

- Enforcing women-only spaces is a widely-used second-best policy to mitigate harassment in transportation settings.

$\Rightarrow$ How to evaluate such policies?

Outline

Outline

Women-only options in transportation

- Collective transportation markets involve direct interpersonal contacts.
- Specific population segments face safety concerns that can limit their participation in economic activities.
  - well-known barrier (school, jobs, etc.) in developing countries.
  - also documented in developed countries (e.g. sexual assaults reported on Uber).
- Market designs limiting trade between users with specific sociodemographics have emerged as a potential solution.
  - Women-only (WO) carriages in Japan, Mexico, Brazil, Turkey.
  - WO option in EU night trains.
  - New Uber features rolled out over the world, and Women+ Connect in Lyft.
    (e.g., `https://www.theguardian.com/technology/2026/mar/09/uber-women-only-option`)

P2P marketplaces

- In peer-to-peer (P2P) marketplaces, the non-professional nature of users may aggravate such concerns.
  $\Rightarrow$ WO options: Tandem, ShearShare, SafeSpace.
- **This paper:** BlaBlaCar (BBC), the largest P2P long-distance carpooling platform in the world.

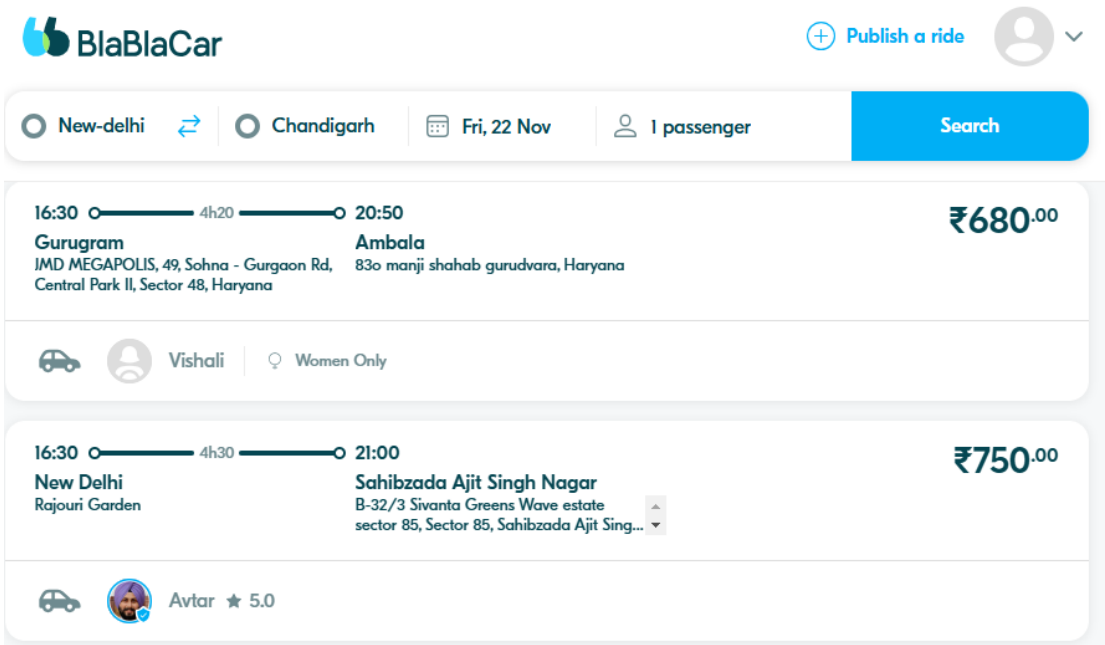


Figure 1: Women-Only Mode Example

Research questions

1. Do female drivers adopt the WO mode?
2. How does the availability of the WO mode affect female drivers access to the market?
3. How does the WO mode affect the choices of passengers?
4. Under which conditions is a WO mode "welfare-improving"? Redistributive consequences?

This paper

- We study BBC user choices in 10 countries: France, Germany, Italy, Spain, Croatia, Romania, Turkey, India, Brazil, and Mexico.
- Two interventions randomizing choice and communication of the WO mode.
- We quantify WO mode effects on adoption, prices and participation (both intensive and extensive margins).
- We ultimately aim to better understand and estimate the welfare implications of the WO mode, and how they may differ across countries (suggestions welcome!!).

Preview of the results

- **Intensive margin (drivers):**
  - On average, 4% of female drivers choose the women-only mode.
  - There exists substantial adoption heterogeneity across:
    - Countries: 2% treatment effect in Spain, 17% in Turkey.
    - User experience: 10% treatment effect in users without previous experience.
- **Extensive margin (drivers):** In all countries but Brazil and India, the effects are not statistically different from zero.
- **Next steps:**
  - Passengers' choices and market-level outcomes (quasi-experimental design).
  - Developing and empirically evaluating a framework to capture the welfare implications of the WO mode.

Outline

Overview of BlaBlaCar

- Through BBC, non-professional drivers and passengers share a common trip.
- Drivers publish their trips, choosing route, time of departure, seats and the price.
- Passengers decide which driver to send a request to, if any.

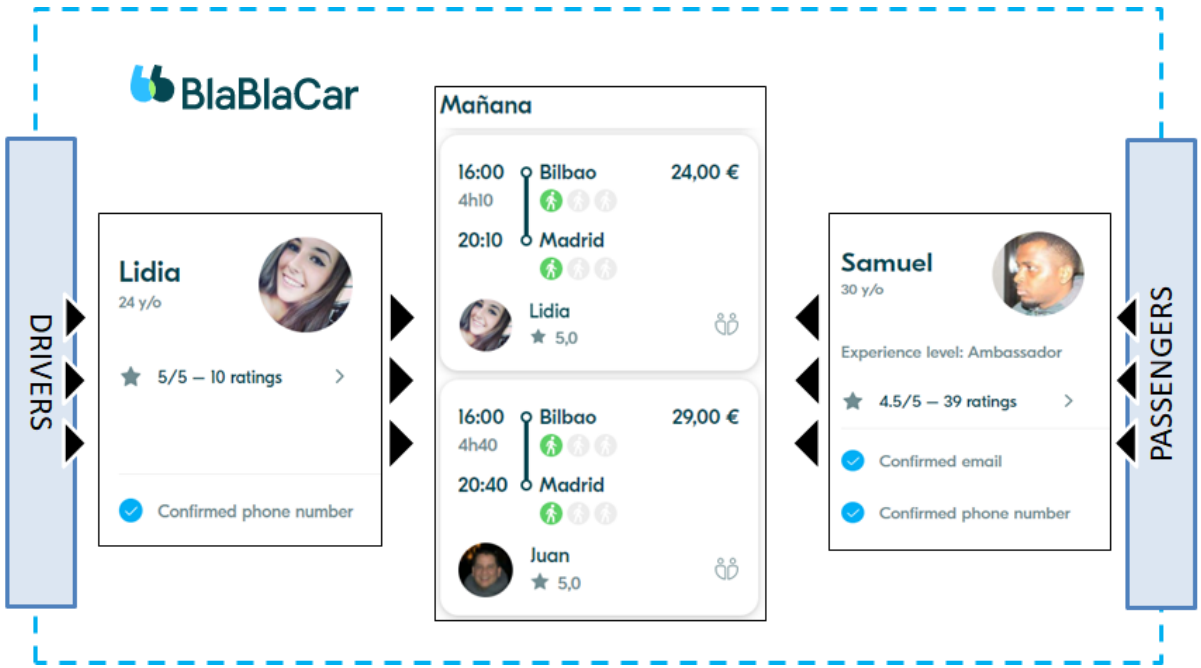


Figure 2: BlaBlaCar Overview. P2P Marketplace

The women-only (WO) mode in BlaBlaCar

- Before 2018, BBC allowed female drivers, during the publication, to choose the WO mode.
  - After 2018, BBC removed the WO feature from the publication flow.
  - The feature was reintroduced in Spring 2024.
- In BBC, the WO mode has three main features:
  - It is freely chosen by the driver.
  - It ensures that only female passengers observe her trip.
  - It is signalled to female passengers through a badge.

Figure 3: BlaBlaCar Women-Only Badge Snapshot

Two randomized experiments

BBC team has run two main interventions:

- **Intervention 1** randomizes the inclusion of the WO feature in the publication flow.
- **Intervention 2** randomizes the sending of an email explaining the WO mode to female drivers.

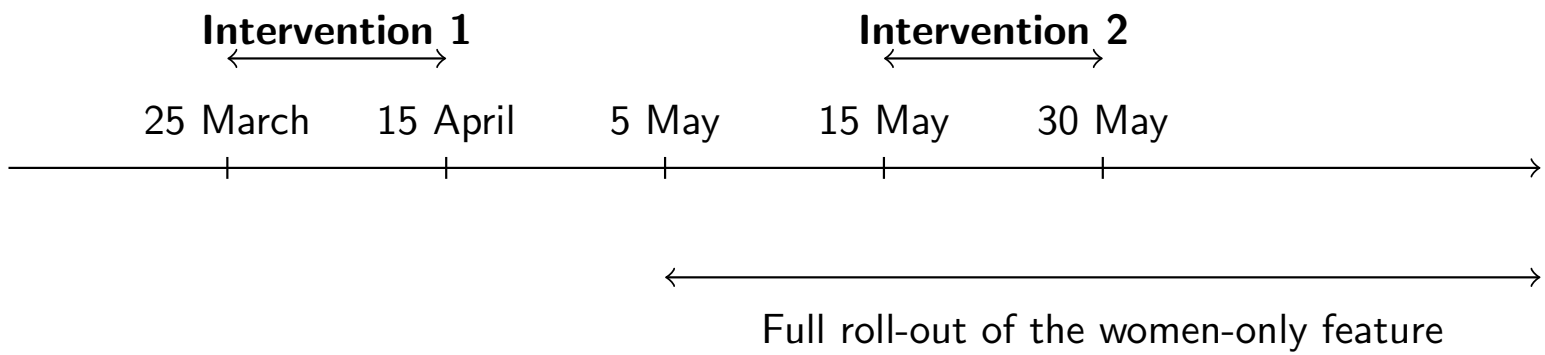


Figure 4: Women Only Intervention Timeline

Outline

Overview

- **Treatment:** The WO option was added to the publication flow:
  - Same screen as seat choice.
  - Prior to choosing price.
- **Timeline:** 25 March - 15 April 2024 (5 April - 15 April for Android).
- **Treatment assignment:** 50-50 split, randomized at the driver's level.
- **Population:** all BBC posting female drivers.

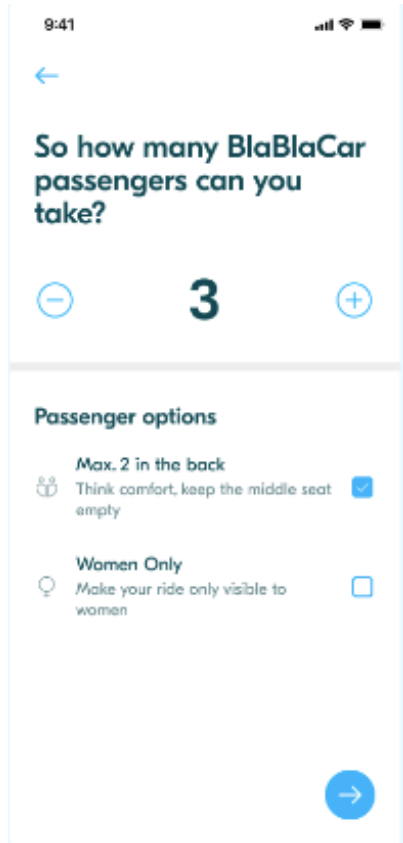
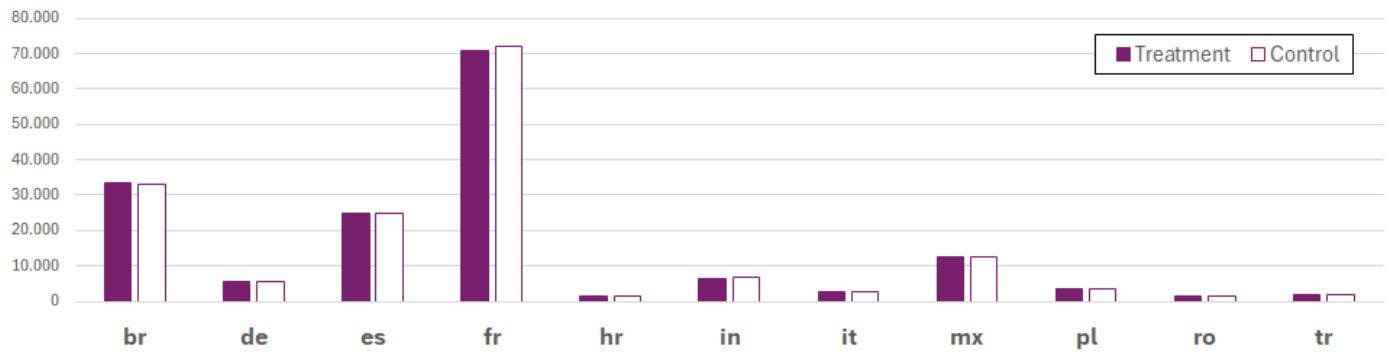


Figure 5: Intervention 1

Data

- The data set comprises all trips published by female drivers in Intervention 1.
  - Posting driver: user posting a trip.
  - Female condition is stated by the user, controlled by the rest and the platform.
- In total, 326.985 trips: fr (43%), br (20%), es (15%).

Figure 6: Sample Size by Country. Intervention 1



Balance tests

Table 1: Summary Statistics. All countries. Intervention 1

Variable	Treatment	Control	Standardized diff
N	163132	163853	
client_platform (SPA)	0.28 (0.45)	0.28 (0.45)	-0.01
client_platform (ANDROID)	0.21 (0.41)	0.21 (0.41)	-0.00
client_platform (IOS)	0.51 (0.50)	0.51 (0.50)	0.01
duration_hours	3.03 (2.86)	3.04 (2.85)	-0.00
distance_km	247.54 (237.87)	248.05 (236.75)	-0.00
stopover_count	1.18 (1.57)	1.19 (1.58)	-0.01
offered_seats	2.82 (0.79)	2.82 (0.79)	0.00
age_years	35.12 (12.29)	35.28 (12.15)	-0.01
has_profile_picture	0.89 (0.32)	0.88 (0.32)	0.01
is_phone_certified	1.00 (0.03)	1.00 (0.04)	0.01
is_email_valid	0.91 (0.29)	0.91 (0.29)	-0.01
preference_chattiness (maybe)	0.87 (0.33)	0.87 (0.34)	0.01
preference_chattiness (yes)	0.10 (0.31)	0.11 (0.31)	-0.01
preference_chattiness (no)	0.02 (0.15)	0.02 (0.16)	-0.00
preference_music (maybe)	0.61 (0.49)	0.61 (0.49)	-0.00
preference_music (yes)	0.39 (0.49)	0.39 (0.49)	0.00
preference_music (no)	0.00 (0.06)	0.00 (0.06)	-0.00
preference_pets (maybe)	0.59 (0.49)	0.59 (0.49)	0.00
preference_pets (no)	0.25 (0.43)	0.26 (0.44)	-0.01
preference_pets (yes)	0.16 (0.37)	0.16 (0.36)	0.01
preference_smoking (maybe)	0.51 (0.50)	0.50 (0.50)	0.01
preference_smoking (no)	0.45 (0.50)	0.45 (0.50)	-0.00
preference_smoking (yes)	0.04 (0.20)	0.04 (0.20)	-0.01
experience_in_platform_years	5.08 (3.97)	5.07 (3.96)	0.00
rating_count	29.45 (54.72)	29.75 (54.91)	-0.01
rating_average	4.83 (0.33)	4.83 (0.33)	0.00
driving_rating_average	2.97 (0.13)	2.97 (0.13)	0.00

Empirical specification

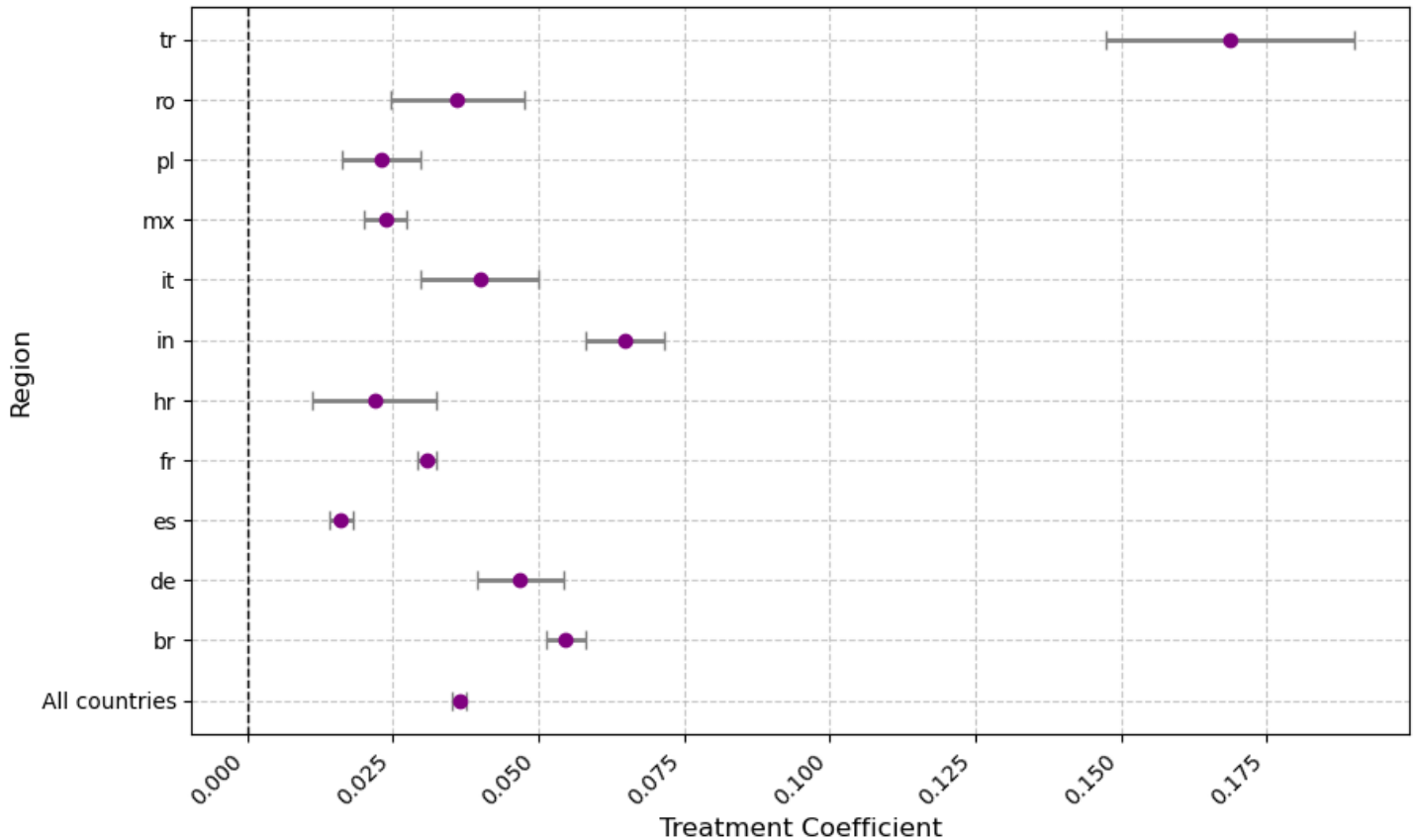
- Our main specification is:

$$y_t = \alpha + \beta Treat_t + \epsilon_t, \tag{1}$$

- Unit of observation: t denotes trip.
- $Treat_t$ is a dummy variable for treatment status.
- y_t are variables that follow the choice of the women-only feature in the publication flow:
  - Women-only mode, dummy variable that takes value 1 if the driver chooses WO.
  - Prices, in euros and log euros, in absolute and relative terms (per km).
  - Automatic mode, dummy variable that takes value 1 if the driver chooses the mode.
  - Deleted trip, dummy variable that takes value 1 if the driver deletes the trip.

Main result

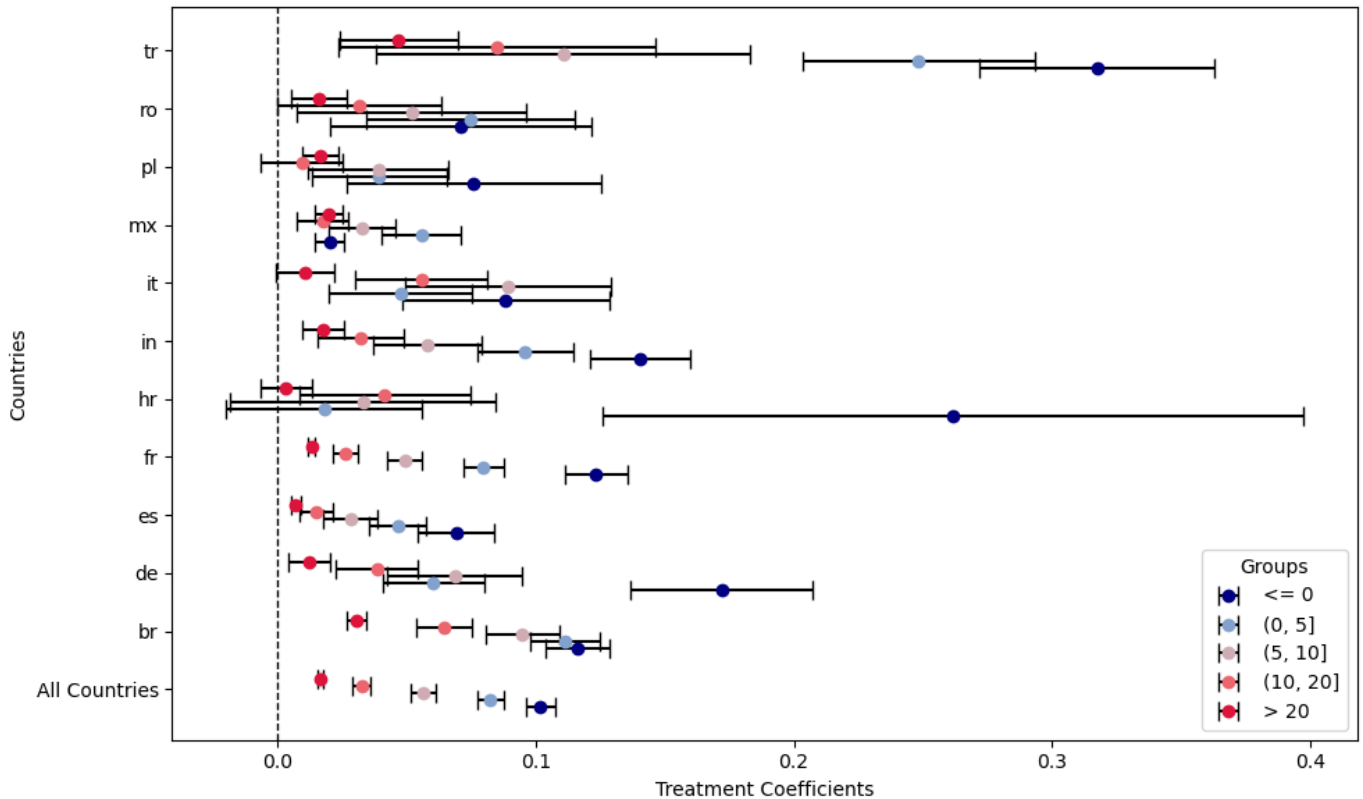
Figure 7: Treatment Coefficient by Country. Intervention 1



- Significantly positive adoption rate of the women-only mode.
- Heterogeneity across countries: Spain, 2%; Turkey, 17%.

Heterogeneity analysis

Figure 8: Treatment Coefficient. Heterogeneity Analysis by User Experience. Intervention 1



- Heterogeneity by user experience: users with 0 trips, 10%.
- Other heterogeneity analysis: age, offered seats, trip distance, rating, day/night.

Outline

Overview

- **Treatment:** An email explaining the features of the WO mode.
- **Timeline:** 15 May - 30 May 2024.
- **Treatment assignment:**
  - BR/FR: 3 groups, treatment, delayed treatment and control.
  - Other countries: 2 groups, treatment and control.
  - All: randomization at the driver's level.
- **Population:** BBC active female drivers.

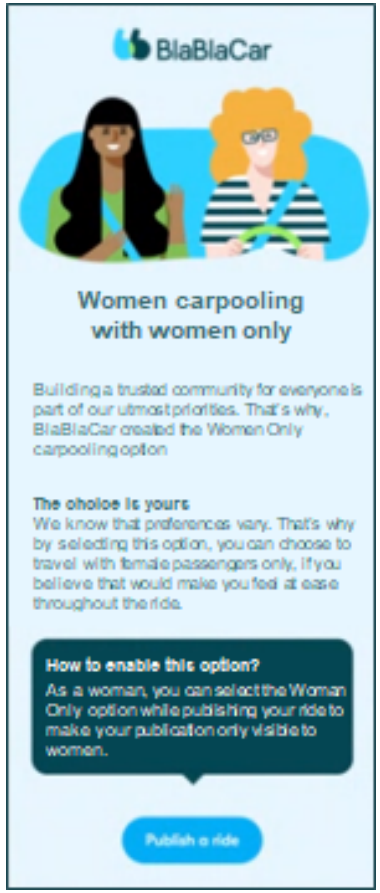


Figure 9: Intervention 2

Data

- The data set comprises all active female drivers.
  - Active driver: user who has published a trip 21 months prior to intervention.
  - Female condition is stated by the user, controlled by the rest and the platform.
- We exclude from the sample two types of observations.
  - Drivers who have been blocked by the platform.
  - Drivers who have deleted their profile accounts.
- In total, there are c. 306,927 drivers: fr (40%), br (13%), es (11%)

Balance tests

Table 2: Summary Statistics. All countries. Intervention 2

Variable	Treatment	Control	Standardized diff
N	272521	34406	–
publication_platform_code_android_avg_past	0.43 (0.48)	0.45 (0.49)	-0.03
publication_platform_code_ios_avg_past	0.40 (0.48)	0.38 (0.48)	0.03
publication_platform_code_mweb_avg_past	0.11 (0.30)	0.11 (0.30)	-0.00
publication_platform_code_other_avg_past	0.00 (0.03)	0.00 (0.03)	-0.00
publication_platform_code_web_avg_past	0.06 (0.22)	0.06 (0.21)	0.01
duration_hours_avg_past	3.59 (2.84)	3.63 (2.89)	-0.01
distance_km_avg_past	268.44 (229.09)	269.09 (230.97)	-0.00
stopover_count_avg_past	1.19 (1.38)	1.18 (1.38)	0.01
offered_seats_avg_past	2.57 (0.78)	2.58 (0.78)	-0.01
age_years	35.51 (12.39)	35.45 (12.28)	0.00
has_profile_picture	0.72 (0.45)	0.71 (0.45)	0.01
is_phone_certified	1.00 (0.03)	1.00 (0.03)	0.01
is_email_valid	0.72 (0.45)	0.71 (0.45)	0.04
preference_chattiness (maybe)	0.96 (0.20)	0.96 (0.20)	-0.00
preference_chattiness (yes)	0.02 (0.15)	0.02 (0.15)	-0.00
preference_chattiness (no)	0.02 (0.13)	0.02 (0.13)	0.00
preference_music (yes)	0.13 (0.34)	0.13 (0.34)	0.01
preference_music (maybe)	0.86 (0.34)	0.87 (0.34)	-0.01
preference_music (no)	0.00 (0.05)	0.00 (0.05)	-0.01
preference_pets (no)	0.14 (0.35)	0.14 (0.35)	0.00
preference_pets (maybe)	0.80 (0.40)	0.80 (0.40)	-0.00
preference_pets (yes)	0.06 (0.23)	0.06 (0.23)	-0.00
preference_smoking (maybe)	0.80 (0.40)	0.80 (0.40)	0.01
preference_smoking (no)	0.17 (0.37)	0.17 (0.38)	-0.01
preference_smoking (yes)	0.03 (0.17)	0.03 (0.17)	-0.00
experience_in_platform_years	1.09 (0.63)	1.11 (0.62)	-0.03
rating_count	2.34 (7.56)	2.45 (8.79)	-0.01
rating_average	4.87 (0.46)	4.86 (0.48)	0.02
driving_rating_average	2.97 (0.19)	2.96 (0.20)	0.02

Empirical specification

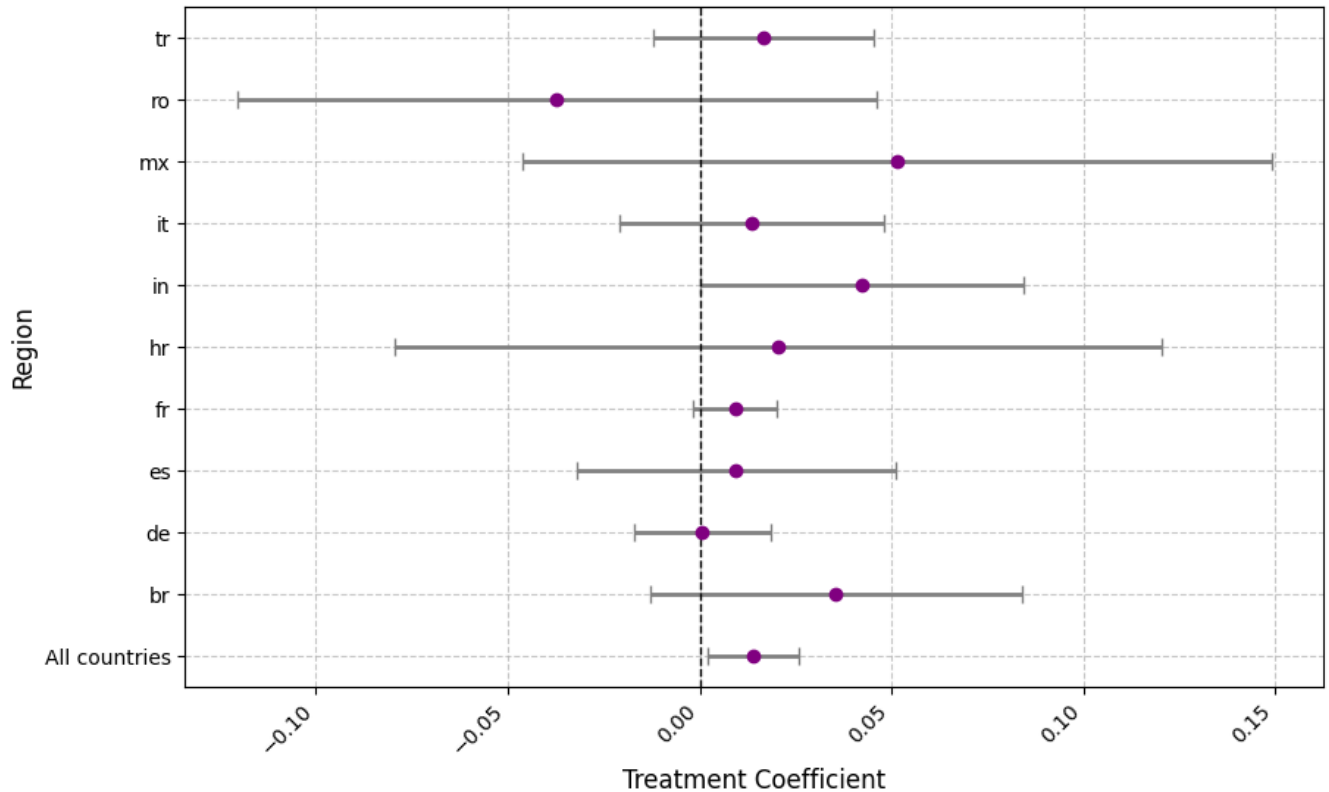
- Our main specification is:

$$y_j = \alpha + \beta Treat_j + \epsilon_j, \tag{2}$$

- Unit of observation: j denotes driver.
- $Treat_j$ is a dummy variable for treatment status.
- y_j are variables that follow the email communication:
  - Number of trips published in multiple time windows.
  - Dummy on whether the drivers posts a trip in multiple time windows.

Main result 1

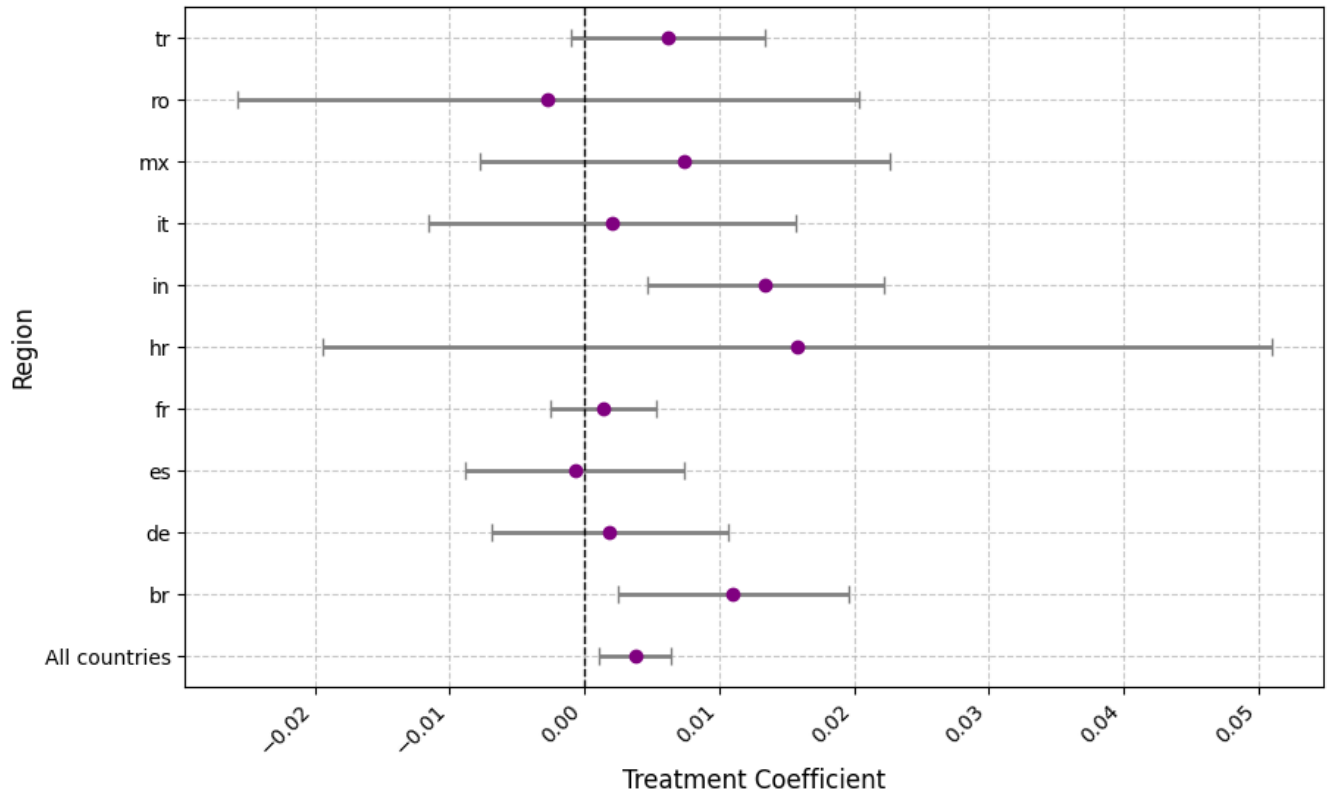
Figure 10: Treatment coefficient. Number of Published Trips. 2 weeks after Treatment. Intervention 2



- Small non-significantly-positive effect in most countries.
- In terms of β/α (treatment/constant coeff.): Turkey, +32%; India, +19%; Brazil, +9%.

Main result 2

Figure 11: Treatment coefficient. Driver posts. 2 Week after Treatment. Intervention 2



- Small non-significantly-positive effect in most countries.
- In terms of β/α (treatment/constant coeff.): Turkey, +27%; India, +17%; Brazil, +6%.

Outline

Conclusions and next steps

- Women-only spaces are a widely-used second-best policy to protect women.
- In BlaBlaCar, we evaluate the randomized worldwide roll-out of a women-only option.

  $\Rightarrow$ Adoption rates are positively and heterogeneously affected.
- This policy has a theoretically-ambiguous impact on welfare.

  $\Rightarrow$ We seek to develop a theoretical framework to characterize the associated trade-offs.
- **Ultimate objective:** assess the welfare implications of the women-only option on BBC, understand how and why these differ across countries.

Thank you!

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