

# Reducing discrimination: Evidence from online experiments on a Hungarian ride-sharing platform

Gabor Simonovits\*      Bori Simonovits †

March 30, 2022

## Abstract

This note explores discrimination against ethnic minorities in the new platform economy.<sup>1</sup> Using experiments fielded in collaboration with a Hungarian car-sharing platform we demonstrate that contrary to the conventional wisdom, Roma users are discriminated even when positive reviews are available. Through a collaborative effort with the platform spanning multiple years we designed an intervention whose purpose was to reduce anti-Roma discrimination, and tested it via a survey experiment. We show that forced exposure to our video clip led to a large reduction in discrimination against Roma passengers as measured by survey-takers' choices made between fictional passengers. While we attempted to pilot our intervention in the field, we were unable to expose real users to our video clip in ways that were compatible with our partner organization's interests. Taken together our findings showcase both the opportunities and the challenges that are involved in fighting discrimination in cooperation with market players.

There are 27053 characters and approximately 5308 spaces. That makes approximately 32361 characters total.

---

\*Assistant Professor, Department of Political Science, Central European University, Academic Co-director, Rajk College for Advanced Studies

†Senior Lecturer at Eötvös Loránd University, Budapest Faculty of Education and Psychology

<sup>1</sup>This research was supported by the Young Researcher's Grant of the National Research, Development and Innovation Fund (FK 127978). It received permission from the Institutional Review board of ELTE University (No 35/2019.)

## Introduction

How can we reduce discrimination against racial and ethnic minorities?<sup>2</sup> Guaranteeing equal treatment to vulnerable groups should be in the forefront of the scholarly agenda both because of its inherent unfairness and its consequences: discrimination against minorities perpetuates their marginalized position. Yet, while the evidence of discrimination against minorities continues to grow across different settings, there is little research exploring interventions that can *change* discriminatory behavior.

Finding ways to reduce discrimination is difficult for several reasons. First, while new research has identified effective ways to reduce *prejudice* (Broockman and Kalla 2016) it is unclear if the same interventions would also lead to behavior change. Second, compared to prejudice – that is in the focus of most empirical research – measuring discrimination is harder as it necessitates the observation of how individuals behave in everyday interactions. Third, successful interventions need solve the problem of *designing* persuasive appeals and finding ways to *reach* a target population. The contribution of our project is to test an intervention that seeks to reduce discriminatory behavior in an ecologically valid setting.

We explore discrimination against the Roma minority in Hungary. To study discrimination, we fielded randomized experiments in collaboration with a large Hungarian ride-sharing platform. First, we established baseline rates of discrimination using an audit study in which we varied the ostensible ethnicity of prospective riders. Second, we designed and produced a short video clip working together with the ride-sharing platform and a professional advertising company, and tested the effectiveness of this intervention in a survey-experiment fielded to a convenience sample of Hungarians who regularly use their car. Finally, we attempted to roll-out the same intervention to the full population of users.

Both our audit study and our survey experiment showed pronounced discrimination—a roughly 20% points lower acceptance rate compared to the 67% baseline—against Roma individuals. We have also found evidence that this discrimination is unlikely to be driven by differential beliefs about quality: our findings remain unchanged when drivers have access to the review ratings of passengers. We have also found that at least on the short term our intervention led to a large reduction in discrimination: a 50% decrease compared to the 20% baseline. However, it

---

<sup>2</sup>Our experiment was pre-registered and we followed a declared pre-analysis plan. Our pre-analysis plan is available at [here](#), the field experiment and [here](#), for survey experiment.

appears that the treatment only changed behaviors towards high-status members of the ethnic minority. Finally, some initial results also point to the inherent difficulty of exposing users to such persuasive appeals.

## Research design

We study discrimination in the context of ride-sharing. The platform our research team cooperated with facilitates matches between drivers offering extra seats and passengers looking for a cheap and convenient means to travel.<sup>3</sup> Similarly to Michelitch (2015) we study ride-sharing as it provides a unique perspective to study discrimination in everyday interactions in an ecologically valid setting. Moreover, our collaboration with a digital platform allows us to easily observe the digital footprints of these interactions as well as to target its users with an realistic intervention.

Recent studies have shown that even though on many of these online platforms racial or any other forms of discrimination are prohibited; minorities such as African Americans are treated unfairly on Airbnb (Edelman, Luca and Svirsky 2017; Cui, Li and Zhang 2020) as well as on ride-sharing platforms, such as Uber and Lyft (Ge et al. 2020). While there is some evidence that the rating systems embedded in these platforms can mitigate such discrimination (Cui, Li and Zhang 2020) there is a lingering question whether the platforms themselves can enforce these norms. Moreover, to the extent that discrimination is taste-based, targeted efforts are needed to dissuade users from discrimination.

## Audit experiment

Our audit study relied on a between-subjects design (Fang, Guess and Humphreys 2019) in which drivers using the ride-sharing application were contacted with requests for rides from test accounts set up by our research team. We decided to focus our attention on discrimination against *riders* as opposed to drivers as the platform had been characterized by an excess demand for rides—especially since the outbreak of the COVID-19 pandemic. Moreover, this choice also allowed us to test discrimination while minimizing disruption on the platform.<sup>4</sup>

---

<sup>3</sup>Our partner organization is the largest such platform in Hungary and has administered over 3 million rides since its launch in 2007.

<sup>4</sup>Source: online correspondence with the co-founder and managing director of the ride sharing platform (August 2021).

Our rider profiles were characterized by a photo, a name, and in a subset of cases by reviews purportedly written after past rides. To prepare these profiles, we first contracted a professional graphic designer to create Roma and a non-Roma “versions” of a set of photos obtained from volunteers.<sup>5</sup> Second, we reinforced the perception that we wanted create by using either stereotypical Roma or neutral first and second names.<sup>6</sup> Finally, we generated “reviews”—from additional fake accounts – for a subset of the rider profiles to manipulate the amount of information available about the passengers.<sup>7</sup>

The fieldwork was carried out by Szinapszis, a leading Hungarian market research firm between October 12 and November 6, 2021. They took samples from the population of ads on the platform and contacted drivers according to a pre-determined schedule that included a list of rides to be completed by each test passenger profile. We excluded commercial rides, rides leaving the country, and rides taking place within a single town. Apart from the identity of the passenger, the messages themselves were identical, except for the greeting and the parameters of the trip (i.e. Hello, I would like to travel from X to Y.).

Members of the market research team conducting the study were instructed to carry on the communication until its outcome could be determined (ride approved or rejected), and then politely cancel the trip. Our outcome of interest was coded as *Approved* when the driver agreed to give a ride to the passenger and *Rejected* otherwise.<sup>8</sup> Finally, we also obtained data on the drivers’ attributes including their gender and the ratings they themselves had received. We used these data only in order to establish balance across treatment groups.<sup>9</sup>

We note some ethical issues regarding our experiments. First, in our audit study we did *not* obtain informed consent from participants – as it is standard in audit studies. This is because

---

<sup>5</sup>See Figure OA1 in the Online Appendix for the full description of these profiles.

<sup>6</sup>With pilot studies conducted on online convenience samples we verified that our treatment successfully cued ethnicity in that the people in the “Roma” versions of the photo pairs were indeed more likely to be perceived as Roma.

<sup>7</sup>Similarly to other online marketplaces, on the Hungarian ride-sharing platform beyond the numeric scores qualitative reviews are also accepted from the users after they have completed their trip. To half of the profiles we added four positive (e.g. Good company, pleasant journey) and one neutral review (e.g. He postponed his trip, but he canceled in time). To the other half of the profiles we added no reviews—thus they appeared to be new users on the platform.

<sup>8</sup>On this ride-sharing platform passengers do not need to message drivers to reserve a seat—instead they can book a seat, and the driver subsequently needs to approve their booking. We opted for using messages to reduce the burden on the drivers. In a small pilot study conducted in August 2019 bookings were made upon a positive response from the contacted drivers to test the correspondence between positive feedback and the real behavior of the driver. As none of the bookings was deleted by the drivers, we assume that by only requesting a ride (instead of making real bookings, which would be too costly to cancel later) we could adequately measure the drivers’ behavior towards the different testers.

<sup>9</sup>See Table OA1 in the Online Appendix.

informing subjects about the goal of the study would likely to have changed their behavior. To avoid hurting the reputation of the platform our partner organization suggested that we do not debrief subjects. These research activities were approved by the Ethical Research Committee of [INSTITUTION REDACTED]

## **Intervention**

We designed the intervention based on two theoretical considerations. First, we used the concept of perspective taking (Broockman and Kalla 2016; Simonovits, Kezdi and Kardos 2018)—an approach highlighting the importance of members of the majority group’s seeing the experiences of minorities from the minorities’ perspective. Second, we sought to explicitly highlight injunctive norms against discrimination. (Fang, Guess and Humphreys 2019). Our goal therefore was not to *test* new theories, but rather to build on approaches that have already proved successful in reducing prejudice and discrimination.

The intervention took the form of a 50 second-long animated video clip (available here). The clip depicts a Roma person first trying and failing to find a hitchhike ride, and then being picked up by a user of the Hungarian ride-sharing app. The content of the clip was intended to trigger a feeling of compassion for the Roma person as well as to encourage viewers to maintain tolerance as a key value on the platform. We designed this clip in collaboration with the owner of the ride-sharing company and a creative agency specializing in designing social awareness raising campaigns. We designed an iterative procedure, and used pre-testing as well as focus-group discussions to fine-tune the story-line and the looks of the characters. The goal of this was to ensure a compromise between the goals of the research team and the partner organization.

## **Survey experiment**

In order to probe the effectiveness of the intervention we designed an experiment embedded in a survey, and fielded it to an online convenience sample of Hungarian adults (N=804). The fieldwork was carried out in December 2021, by the same market research firm that implemented our audit study. As our goal was to approximate the immediate effect of our treatment on discriminatory behavior among potential users of the ride-sharing app, we wanted to collect data on a diverse sample of people owning and using their own car. Of course, this also implies

that our findings are unlikely to generalize to any well defined population.<sup>10</sup>

After giving informed consent and passing an attention check, participants were asked to watch a short movie clip. They were randomly assigned to either the movie clip depicting the Roma rider or a placebo stimulus provided by the platform which did not make any reference to minorities or inclusiveness. The clips were embedded in the surveys and exposure was forced in the sense that participants could not complete the survey unless they had watched the video they were assigned to. We also prevented them from fast-forwarding or stopping the clip. After they watched the videos, subjects were asked to describe their reactions to it, and as a distractor they were asked a series of questions about their attitudes towards ride-sharing as well as demographic questions.

We conceptualized our outcome as a choice between fictional passengers looking for rides. We used the same photos and names as in our audit study, but also provided additional details (age and occupation for further distraction). Each subject was shown four “cards” and was asked to select up to three of them to offer a ride to. Crucially, we created a Roma and a non-Roma version of each passenger and to each participant we randomly showed the Roma version of one passenger and the non-Roma version of the other three. Moreover, we also randomized the occupation of the passengers with each person in the photos characterized as either having a low-status job (such as a cleaner or a shop assistant) or a high-status job (such as a teacher or a programmer). We used occupational status to test statistical discrimination, given that most participants of the survey had not used this app before, and thus would have been unfamiliar with the meaning of these review scores. Our main outcome of interest was thus the choice of a given character by a subject, with the manipulated variables—passenger ethnicity and passenger skill level—defined at the level of subject X passenger pairs.

---

<sup>10</sup>We also asked respondents about their past experience with ride-sharing. It turned out that about 18% of them had used ride-sharing as a passenger and 9% as a driver. Thus we were able to explore whether our findings generalize to the subset of respondents who are also potential targets of the intervention. Reassuringly, in analyses reported in Table OA7 in the Online Appendix, we found that the intervention in fact had a *larger*—though less precisely estimated—effect on past drivers.

## Results

### Discrimination

We start by reporting discrimination rates against the Roma based on our audit study. In Figure 1a we compare the proportion of accepted requests by Roma vs. non-Roma passengers.<sup>11</sup> Following our pre-analysis plan, we make this comparison separately for passengers with vs. without reviews.<sup>12</sup> In the condition without ratings, the results indicate pronounced discrimination against the Roma: a 17% points smaller acceptance rate compared to the 67% rate for the non-Roma (95% CI [24.9-4.3]). We find an even larger rate of discrimination (21%) against the Roma across the passengers we assigned a positive review.

Notably, the results of our survey experiment are largely in line with our findings obtained in the field. According to the specification declared in our pre-analysis plan, we find that in the placebo group subjects were 20% less likely to pick a passenger who was Roma compared to a 65% baseline (90% CI [15.2 to 24.4]). To explore the possible sources of this discrimination, in Figure 1b we contrast discrimination across passengers with low vs. high skilled jobs. What we find is that while respondents on average are more likely to choose passengers with high-skill jobs, this premium benefits Roma and non-Roma passengers to a similar extent. In other words, Roma passengers face the same level of discrimination regardless of their skill-level.

Taken together, these results point to rates of discrimination very similar to those found by Cui, Li and Zhang (2020) studying anti-Black discrimination on Airbnb in the US as well as Simonovits et al. (2021) in an audit study of Hungarian local government officials. However, our findings also challenge the conventional wisdom in that we have found no evidence of statistical discrimination, and instead show evidence for taste-based discrimination in that minority users receive unequal treatment even when positive information is available about them.

### Effect of intervention

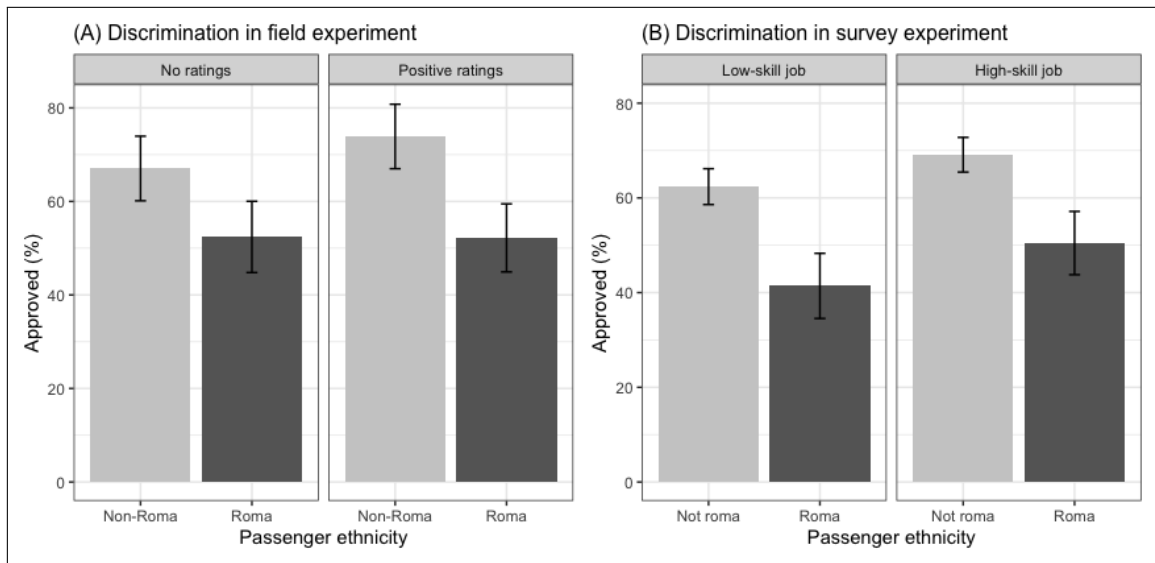
We have studied the effect of the intervention based on the survey experiment. We start by documenting viewer reactions to the video clip both in and of itself and benchmarked to the placebo clip that was shot earlier by our partner organization. Importantly, we find that the

---

<sup>11</sup>Regression results are included in Tables OA3 (field experiment) and Tables OA3 (survey experiment).

<sup>12</sup>We follow our analysis plan except that we decided to report our results on the third arm of the experiment (passengers with disabilities) in a separate paper.

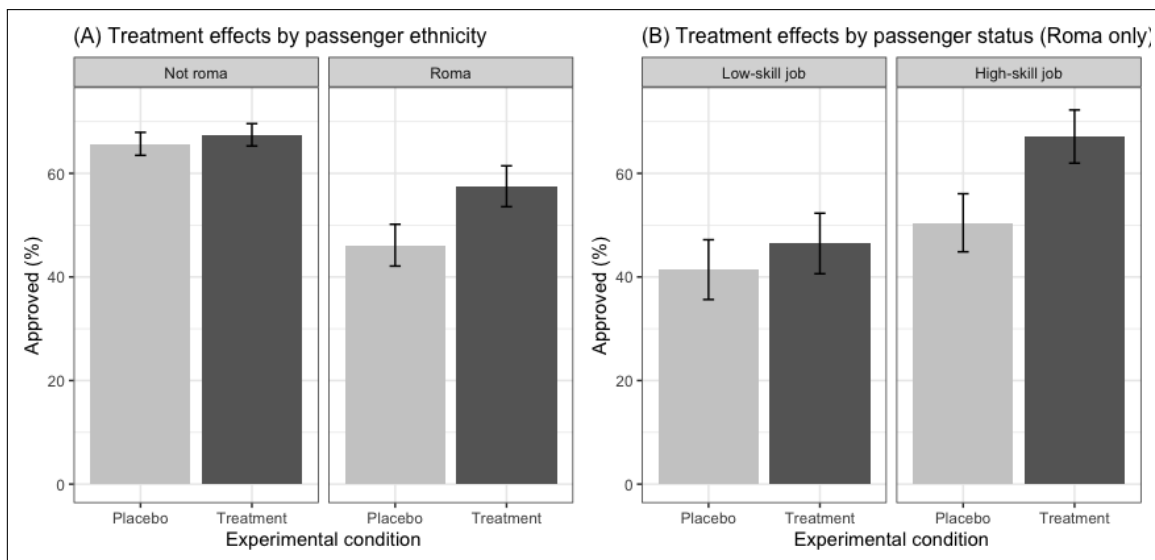
**Figure 1:** Roma are discriminated in both the field experiment and the survey experiment



Bars are average response rates by experimental conditions. Error bars are 95% confidence intervals.

clip was well liked (over 80% said that they liked it, or liked it a lot) and its overall reception did not differ significantly from that of the placebo clip (see Table OA5 in the SI). We also observed emotional reactions that were consistent with our goals: subjects rated the clip sad and surprising, which reflects both cognitive and affective engagement.

**Figure 2:** Intervention reduces discrimination



Bars are average response rates by experimental conditions. Error bars are 95% confidence intervals.



We have visualized the effect of the treatment in Figure 2. The left side of the figure shows that exposure to the video clip increased the probability of a Roma person’s being chosen by 11.8%-points (a 25% increase over a 45.9% baseline, 90% CI [6.2 to 17.3]). We note that the treatment did not increase the probability of a non-Roma person being chosen.<sup>13</sup> Thus the baseline discrimination amounting to 20% was roughly cut in half as the result of the treatment. For a formal test we estimate a model including an indicator for *Roma passenger*, *Treatment* and their interaction. The interaction effect is 9.5% (P=0.018, 90% CI [2.9 to 16.1]).

In post-hoc analyses we explored whether the effect of the intervention varies according to the status of passengers. Panel B of Figure 2 reveals that the effect of the intervention was much larger on Roma passengers of high status. The treatment led to a stunning 17% increase in the probability that a high-status Roma individual would be selected as compared to a 50% baseline (90% CI [9.4 to 24.7]), but it turned out that low-status Roma applicants were helped to a much lesser degree (a 5.7% effect with 90% CI [-2.4 to 13.8]). Ironically, as the result of the intervention, the treatment group showed signs of statistical discrimination in that these respondents selected high-status Roma treated similarly to the high-status non-Roma but continued to discriminate low status Roma (see columns 6 and 9 of Table OA5 in the Online Appendix).

## Implementation

In collaboration with the owners of the platform we experimented with possible ways of implementing the intervention. We have provided a detailed explanation of these campaigns in Online Appendix D and summarize the key findings here. Following the strategy proposed by the platform, the video clip was shared with users embedded in the monthly newsletter of the company. Of the 8,789 drivers—a third of the platform’s active users—the newsletter was sent to, only 0.4%, i.e. 34 individuals started to watch the clip.

On the one hand, this finding implies that through the mode of delivery consistent with the organization’s usual practices the intervention had little chance of affecting a large scale behavioral change among its users. On the other hand, low compliance also made our strategy to

---

<sup>13</sup>Additionally, we also measured discriminatory attitudes by asking respondents if they were (1) comfortable with sharing a ride with a Roma person and (2) whether they thought that ride-sharing platforms should guarantee the equal treatment of the Roma. We report these comparisons in Table OA6 in the Online Appendix. We found that the treatment increased the subjects’ willingness to share a ride with a Roma passenger (5.5 points compared to a 49 points baseline, but the treatment did not increase support for the platform guaranteeing equal treatment.

*evaluate* the intervention infeasible. In a second phase of the campaign we successfully increased compliance by changing our mode of delivery targeting a smaller group of drivers who were *ex ante* more likely to engage with our communication. However, the resulting sample was still too small for an evaluating of our campaign to be possible.

## Conclusion

Our paper attempts to advance the scholarship on discrimination and its possible cures in several ways. First, by using an audit study of a large Hungarian ride-sharing platform, we have demonstrated a large degree of discrimination against Roma passengers. While our estimates of discrimination are similar to those of existing studies on the sharing economy (Cui, Li and Zhang 2020), we have found no evidence supporting the notion that positive information mitigates unequal treatment. Instead, findings from both our audit study and our survey experiment demonstrate that, in this context, individuals discriminate ethnic minorities even in the face of positive information about them (i.e. detailed reviews by other users, or counter-stereotypical indicators of social class).

Second, given that the logic of the platform itself—i.e. the provision of peer-reviews to users to ensure quality service—seems unlikely to solve the problem of discrimination, we designed an intervention to raise awareness of the unequal treatment of the Roma, and to enhance perspective taking with ethnic minorities—an approach that proved to be effective by earlier research. In our survey experiment we found that forced exposure to our video indeed led to large reductions in discrimination, though the effect appeared to be limited to high-status members of the minority. More importantly though, our collaboration with the platform failed to result in an effective roll-out of our campaign due to the difficulty of reaching users.

All in all, it appears that the bottleneck in reducing discrimination in online marketplaces might not be the designing of effective interventions, but rather the difficulty of exposing users to them. While recent work have pointed to surprisingly effective ways of reducing prejudice against vulnerable groups (Broockman and Kalla 2016; Adida, Lo and Platas 2018; Simonovits, Kezdi and Kardos 2018), we worry that these studies might understate the problems of low-compliance, especially in settings where researchers need to collaborate with entrepreneurs in ways that are possibly in conflict with their interests.

## References

- Adida, Claire L, Adeline Lo and Melina R Platas. 2018. "Perspective taking can promote short-term inclusionary behavior toward Syrian refugees." *Proceedings of the National Academy of Sciences* 115(38):9521–9526.
- Broockman, David and Joshua Kalla. 2016. "Durably reducing transphobia: A field experiment on door-to-door canvassing." *Science* 352(6282):220–224.
- Cui, Ruomeng, Jun Li and Dennis J Zhang. 2020. "Reducing discrimination with reviews in the sharing economy: Evidence from field experiments on Airbnb." *Management Science* 66(3):1071–1094.
- Edelman, Benjamin, Michael Luca and Dan Svirsky. 2017. "Racial discrimination in the sharing economy: Evidence from a field experiment." *American economic journal: applied economics* 9(2):1–22.
- Fang, Albert H, Andrew M Guess and Macartan Humphreys. 2019. "Can the government deter discrimination? Evidence from a randomized intervention in New York City." *The Journal of Politics* 81(1):127–141.
- Ge, Yanbo, Christopher R Knittel, Don MacKenzie and Stephen Zoepf. 2020. "Racial discrimination in transportation network companies." *Journal of Public Economics* 190:104205.
- Michelitch, Kristin. 2015. "Does electoral competition exacerbate interethnic or interpartisan economic discrimination? Evidence from a field experiment in market price bargaining." *American Political Science Review* 109(1):43–61.
- Simonovits, Gabor, Bori Simonovits, Adam Vig, Peter Hobot, Renata Nemeth and Gabor Csomor. 2021. "Back to "normal": the short-lived impact of an online NGO campaign of government discrimination in Hungary." *Political Science Research and Methods* pp. 1–9.
- Simonovits, Gábor, Gabor Kezdi and Peter Kardos. 2018. "Seeing the world through the other's eye: An online intervention reducing ethnic prejudice." *American Political Science Review* 112(1):186–193.

# Reducing discrimination in the sharing economy: Evidence from field experiments on a Hungarian ride-sharing platform

## Online Appendix

### A Stimuli

#### A.1 Field experiment

##### A.1.1 Passenger reviews

Passengers with ratings/reviews were given a numerical rating (4.5/5) as well as a sample of written reviews. These reviews were given by profiles we generated for this purpose only. Each profile with reviews were given a sample of 5 reviews with 4 positive and 1 neutral

Positive reviews

- We had a very good chat, the time went by very quickly.” ”Good company, good trip.”  
”Everything was okay!” ”Punctual and reliable, I would recommend him!”

Neutral reviews

- Finally he got into the car somewhere else, but we were able to make arrangements in time

##### A.1.2 Communications

We used slightly modified versions of the following script:

Hi,

I would like to travel from [ORIGIN] to [DESTINATION] On [DATE]. I am visiting my family and bringing them a couple of things. It’s a large suitcase it will fit the trunk. Is that OK?

Best

[NAME]

In the communication above,

ORIGIN , [DESTINATION] and [DATE] was inserted based on the as

NAME was inserted according to the pre-determined list of audits

### **A.1.3 Passenger profiles**

Figure OA1: Passenger photos and information



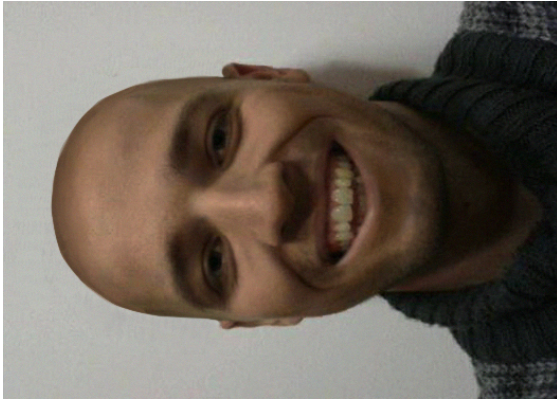
**(A):** Gáspár Kevin, 27, Roma, no reviews, warehouse clerk

**(B):** Orsós Mária (26), Roma, positive reviews, postman



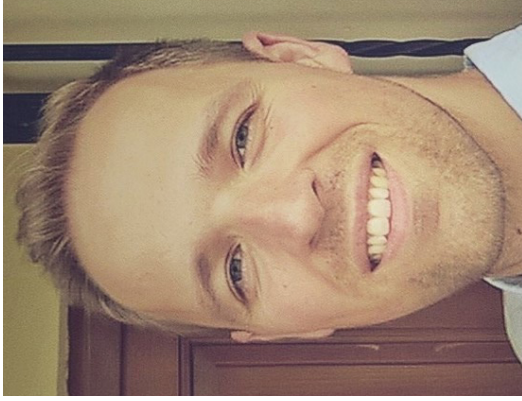
**(A):** Molnár Péter, 26, non-Roma, no reviews, electrician

**(B):** Kovács Bence, 26, non-Roma, positive reviews, security guard



**(A):** Oláh Szebasztián, 27, Roma, no reviews, parking attendant

**(B):** Kolompár Richárd, 29, Roma, positive reviews, factory worker



**(A):** Nagy Ákos, 28, non-Roma, positive reviews assistant at Tesco

**(B):** Varga Máté, 30, non-Roma, no reviews, janitor

## B Intervention

The full video is available [here](#).

The story told in the video is simple. A Roma and a non-Roma person is waiting on the curb. The Roma man is hitchhiking but the non-Roma is waiting for a ride-share. A car stops near them and the driver asks non-Roma men if he wants a ride. He declines saying that he is already waiting for a car and asks if the driver would take the Roma man. The driver replies: “I dont take people like him” and leaves. The Roma man is sad.

Then, another car stops, with the logo of the ride-sharing platform, apparently to pick up the non-Roma man. He asks the driver if he could take the Roma person, too. He agrees, saying there is still one seat left. They all leave and the tagline appears reading: “Everyone has a place with us, except prejudice.”



### B.1 Survey experiment

#### B.1.1 Questionnaire

**Informed consent:** Dear Respondent, Thank you for joining our survey, it will take approximately 5 minutes to fill it in.

This online survey is part of a larger research aiming at examining collaborative consumption platforms. You are not obliged to answer any of these questions, but the more information you provide, the more effective our monitoring will be—so please try to answer as many of them as possible. This way, you enable us to use your answers in the best way.

If you experience any further problems, please feel free to contact our research group at: XXXX.

Thank you!

Q1 I declare that I am over 18 years old and hereby consent and hereby consent to the anonymous processing of the data I have provided.

Yes/No

**Screener:**

Questionnaires are usually boring, and people tend not to pay attention to them. Please prove that you are paying attention by clicking only “blue” and “red” colours as answers to the following question.

Do you have a car that you drive regularly?

Yes/No

We are going to ask you questions concerning carpooling services. Carpooling means that a drivers use his or her car together with one ore more passengers.

 **Carpooling**

Have you ever used carpooling service either as a driver or as a rider?

Only as a rider/Only as a driver/Both as a rider and as a driver/No, I haven't

Do you know anyone, who has used carpooling service as a rider?

Yes/No

Do you know anyone, who has used carpooling service as a driver?

Yes/No

 **Video impressions**

We would like you to watch the next short video on carpooling service. Please turn on the volume on your phone, laptop, or other device that you use.

Treated/Placebo video is shown

 **Carpooling**

We would like to ask you questions about the short video, that you have just watched. On the whole how much you liked the video?

I liked it a lot/I rather liked it/I rather disliked it/I did not like it at all

How well, do you think the following expressions describe or characterize the short film? Please think about the following statements, one-by-one! [Funny, Boring, Sad, Surprising, Exciting]

Not at all/Not really/Somewhat/Totally

 **Demographics**



In the next section we are going to ask you some basic questions.

What is your gender?

Man/Woman

Where do you live?

In Budapest/In a county seat/In a city or town/In a village

When were you born? Please type it in a four-digit format!

Are you currently...?

- Studying
- Working
- searching for a job
- Neither working, nor searching for a job
- Being retired

What is your highest level of education?

- Studying
- Less than 8 years of primary education
- 8 years of primary education
- Secondary vocational education
- Secondary general education
- Post-secondary non-tertiary education
- Tertiary education: BA or BSc
- Tertiary education: MA/MSc

Imagine that you advertise a trip in a carpooling site and four potential passengers request a ride from you, but you have only three free seats in your car. So that you have choose three riders maximum, but you can also choose less or none of them, freely. Please select which riders would you choose out of the following four people?

[See below...]

Please write down the reasons why you decided that way (in a few words)!

---

### B.1.2 Passenger profiles

Our main outcome of interest was respondents' choice between fictional passengers described in photos with accompanying information. We provide a set of these photos below.



Molnár Péter, 35  
takarító



Orsós Máriaó, 27  
árufeltöltő



Nagy Ákos, 23  
egyetemista



Varga Máté, 43  
tanár

## C Descriptive statistics

### C.1 Field experiments

**Table OA1:** Descriptive statistics

Variable	N	Mean	SE	Roma		Non Roma	
				rated	unrated	rated	unrated
Driver's rating	574	4.80	0.02	4.7	4.9	4.8	4.9
Open seats	680	2.66	0.04	2.7	2.7	2.6	2.7
Female driver	669	16.44	1.43	18.8	17.2	15.6	14.2
Approved	684	61.11	1.87	52.2	52.4	73.9	67.0

### C.2 Survey experiment

**Table OA2:** Descriptive statistics - survey

Variable	Mean	SE	Control	Treatment
Age	52.8	0.5	52.3	53.3
Female	55.8%	1.7%	55.3%	56.3%
<b>Place</b>				
Capital	21.5%	1.4%	21.0%	22.0%
County seat	24.2%	1.5%	22.3%	26.1%
Town	34.2%	1.7%	34.5%	33.8%
Village	20.1%	1.4%	22.3%	18.1%
<b>Employment</b>				
Student	2.1%	0.5%	2.3%	1.9%
Employed	54.5%	1.7%	54.8%	54.3%
Unemployed	4.3%	0.7%	5.8%	2.9%
Inactive	5.9%	0.8%	5.8%	6.0%
Retired	33.2%	1.7%	31.5%	34.8%
<b>Education</b>				
High school degree	88.9%	1.1%	89.8%	88.2%
College degree	41.2%	1.7%	39.8%	42.5%
<b>Car-sharing use</b>				
Driver	8.8%	1.0%	8.0%	9.7%
Passenger	23.0%	1.5%	19.0%	26.8%
Knows driver	25.1%	1.5%	23.3%	26.8%
Knows passenger	55.8%	1.7%	53.3%	58.2%

## D Regression results for figures

**Table OA3:** Regression results for field experiment

	<i>DV: Approved</i>		
	(1)	(2)	(3)
Roma passenger	-14.6*	-21.7*	-14.6*
	[5.2]	[5.1]	[5.2]
Positive reviews			6.8
			[5.0]
Roma passenger X positive ratings			-7.1
			[7.3]
Constant	67.0*	73.9*	67.0*
	[3.5]	[3.5]	[3.5]
Ratings	No	Yes	All
Observations	345	339	684
R-squared	0.022	0.050	0.036

*Note:* Regressions in columns 1-3 include passenger fixed effects. Robust standard errors in brackets (clustered at the subject level for columns 1-3). \*  $p < 0.1$

**Table OA4:** Regression results for survey experiment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Roma passenger	-19.8*	-10.3*	-19.8*	-19.2*	-17.9*	-19.4*	-20.0*	-4.0	-20.1*
Treatment	[2.8]	[2.9]	[2.8]	[4.0]	[4.1]	[4.0]	[3.7]	[3.7]	[3.7]
	1.8		1.8		2.0	2.0			1.7
Roma passenger			[1.6]		[2.4]	[2.4]			[2.5]
X Treatment			9.5*		1.2	1.2			16.2*
			[4.0]		[5.7]	[5.7]			[5.2]
Constant	65.8*	67.5*	65.8*	62.0*	63.9*	62.0*	69.5*	71.3*	69.5*
	[1.1]	[1.1]	[1.1]	[1.7]	[1.7]	[1.7]	[1.8]	[1.8]	[1.8]
Sample	Placebo	Treatment	All	Placebo	Treatment	All	Placebo	Treatment	All
Status	All	All	All	Low	Low	Low	High	High	High
# Subjects	413	425	835	413	425	835	413	425	835
# Observations	1,656	1,704	3,360	828	852	1,680	828	852	1,680
R-squared	0.085	0.054	0.071	0.104	0.089	0.095	0.065	0.028	0.049

*Note:* Regressions include passenger fixed effects. Robust standard errors in brackets clustered at the subject level. \* p<0.1

## E Additional results

In this section we report additional results discussed in the text.

**Table OA5:** Reactions to clip

	(Thought clip was...)					
	Liked	Funny	Boring	Sad	Surprising	Exciting
Placebo	71.5	74.6	22	16.1	36	46.9
Treatment	70.3	30.6	24	53.1	48.7	38.9
Difference	-1.2	-44	2.0	37	12.7	-8
	[1.6]	[1.8]	[1.8]	[1.9]	[2.1]	[2.0]

**Table OA6:** Attitudinal outcomes

	Would share ride with Roma...	Equal treatment
Placebo	49.4	65.3
Treatment	54.9	67.5
Difference	5.5*	2.2
	[2.3]	[2.1]
Observations	821	815
R-squared	0.007	0.001

Robust standard errors in brackets, \*  $p < 0.05$

**Table OA7:** Effect of intervention on past users

	DV: Approved			
	(1)	(2)	(3)	(4)
Roma passenger	-20.4***	-12.3	-20.4***	-11.9
	[3.0]	[10.6]	[3.0]	[10.2]
Treatment			2.1	-5.3
			[1.6]	[4.6]
Roma passenger X Treatment			8.2*	23.0*
			[4.3]	[13.0]
Constant	66.2***	69.5***	66.2***	69.4***
	[1.2]	[3.6]	[1.2]	[3.4]
Past user	No	Yes	No	Yes
Observations	1,472	128	2,968	288
R-squared	0.087	0.066	0.076	0.047

*Note:* Regressions in columns 1-3 include passenger fixed effects. Robust standard errors in brackets clustered at the subject level. \*  $p < 0.1$

## F Implementation

We present findings on compliance in Table 1. We report the conversion rates of two separate campaigns: in the first one, ads were delivered in the monthly news-letter of the platform via email. In the second one, the ad was sent through the direct mail system of the platform. For both campaigns, we were able to observe both the share of recipients that opened the mails and the number (and identity) of users that clicked on the video (though we of course could not verify if they watched the entire clip)

**Table OA8:** Roll-out of campaign

	Email sent	Email opened	Clicks on video	Conversion
Delivery	Email campaign			
Roma	8789	1139	34	0.4%
Control	8742	1458	33	0.4%
Delivery	Direct mail within app			
Roma	541	194	37	6.8%

According to our design, we set out to audit drivers that were either sent the internal message containing the video or a control group that was randomly selected from the same sampling frame and was sent no mails<sup>14</sup>. Unfortunately, our attempt to start the audit study showed little promise: over the course of several weeks we were only able to audit about 80 drivers.

<sup>14</sup>We did not send “placebo” mails as the platform was reluctant to do so.

Given the low compliance rate we simply did not expect this design to have sufficient power to detect any possible treatment effect.

In collaboration with the owners of the platform we experimented with possible ways of implementing the intervention. Our goal was to test our intervention in the field by (1) exposing a random subset of drivers to the video clip and (2) auditing both members of this group and a control group using the approach outlined above. Unfortunately, two issues we describe below made the evaluation of the intervention in the field infeasible.

In the first phase of the roll-out the full population of users was randomly assigned to three groups and were sent different versions of the platforms monthly newsletter. The versions of the newsletter contained either the placebo clip, the treatment clip or a third clip designed for a different study. Our goal was to audit users that opened the email to reduce non-compliance in the sample. However, only 0.4% of the users *started* to watch the clip, and compliance was under 3% even among those that opened the email. Thus, it was clear that we would have been underpowered to assess the effect of the intervention on this sample.

After this initial campaign, we convinced the platform to launch another campaigns with three improvements. First, they use a more obtrusive form of communication relying on their internal messaging system. Second, to further increase expected conversion, they contacted only the subset of users in the initial placebo group that **did** open the newsletter. This subset of 1,500 users were re-randomized to three groups: one received a message containing the treatment video clip, the other received no communication and a third a stimulus unrelated to this study. Third, to further increase our power we opted for a within subject design and sought to audit each of the 1,083 users in a sample by both a Roma and a non-Roma passenger.

This improved design proved more effective: of the 541 users assigned to the treatment group, 194 opened the message and 37 watched the video clip, amounting to a 6.8% conversion rate. However, even this more effective treatment deliver did not permit a precise evaluation of the intervention: during a month long test period, we were only able to audit a dozen users in each experimental groups. All in all, the evaluation was caught in a double bind: low compliance necessitated the use of a sample with an ex ante higher likelihood to watch the clip while the erratic rate at which drivers used the platform drove down our sample size to a point at which a precise evaluation was not possible.