# How price sensitive are carpool passengers? Evidence from fee changes

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*We acknowledge that this document is very preliminary. We would like to present the setting and the data to give you a first glance at the empirical strategy. Please take it as a sketch of the project notes. We will provide a more structured document prior to the spring school.*

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# 1 Motivation

Pass-through is an important concept in Economics that refers to the changes in prices due to a cost shock (Fabra and Reguant, 2014). Generally Speaking, there exist two types of pass-throughs: complete pass-through and incomplete pass-through.In the broader pass-through literature, the finding of an almost complete pass-through is the exception rather than the rule. In terms of platform economy, some platforms carry out some commission change.This kind of change in commission can be literally regarded as an exogenous cost shock to passengers. There will be literally two scenarios: on one hand, passengers may have to pay all the cost of commission change (complete pass through);on the other hand,some drivers may be aware of the commission change and are able to change their mark-up to share part of the cost of commission due to the commission shock (Incomplete pass-through).Therefore, our case allows us to observe the scenario where complete pass-through & incomplete pass-through coexist.
We use the trip-level data to make a quasi-experiment design to examine the potential impact of an exogenous fee shock on trip popularity.

# 2 Background Information

The term 'Carpooling' is used to refer to a mode of transport which allows travelers to share a ride to a common destination.Shaheen et al. (2018).One of the most famous carpooling platform is Blablacar.Specifically, Blablacar is the world's leading community-based carpooling app enabling 26 million active members a year to share a ride in 21 countries. Its technology matches drivers with empty seats with passengers heading the same way, so they can share the cost of the trip. What sets Blablacar apart from other apps such as Uber is that Blablacar creates a two-sided market where passengers are able to choose their desired trip based on their desired date and route whenever they want, and drivers are free to publish his ride and set the price of the ride whenever they want, which is different from the matching system that Uber assigns drivers to passengers and pair them automatically.Once the passenger sends their requests to the driver, drivers will have time to decide whether to accept or not and the platform will make money by charging a commission according to the route and date.In other words, the total price the passenger sees is equal to the price set by the driver plus the commission charged by the platform.

# 3 Timeline of Commission Change

As illustrated in 1,Blablacar implemented several changes in commissions.To put it precisely, Blablacar lower commissions to 0 on 50 of the top routes on August 6th, 2021 and increased the commission for these 50 routes in the middle of October but the commission was still less than the normal value.Finally, Blablacar set the commission to the normal value before the first shock in August.

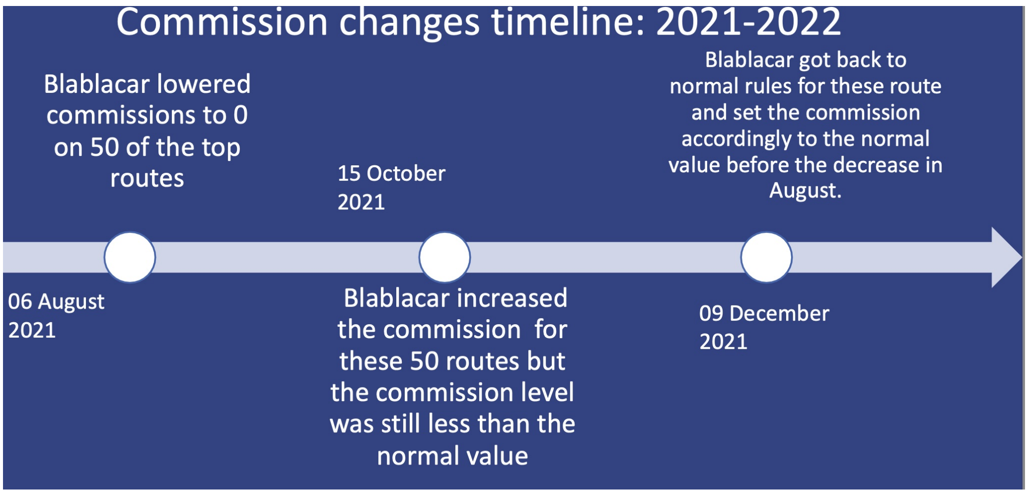


Figure 1: The evolution of commission change

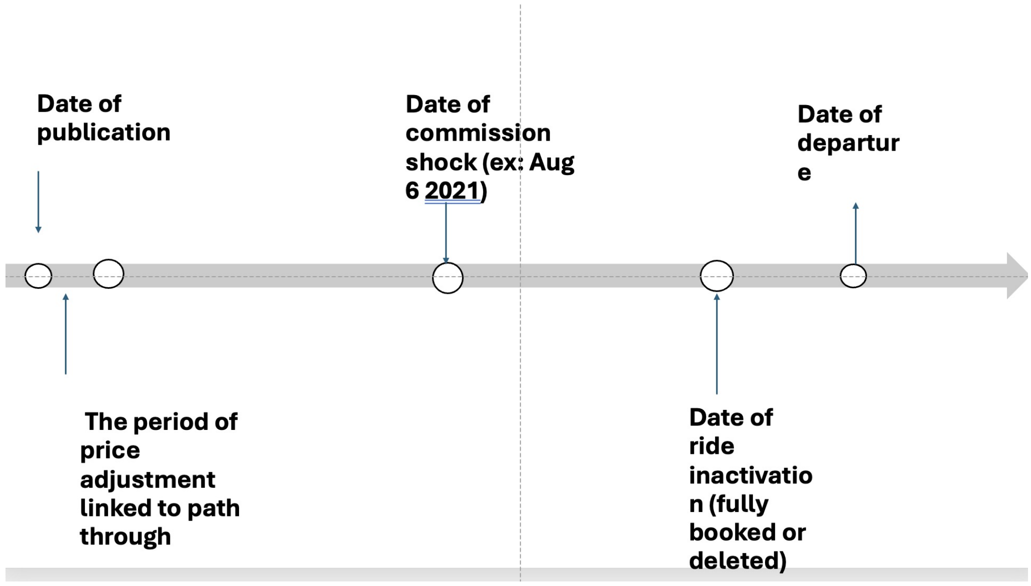

Figure 2: Eligible Rides

# 4 Main idea: Empirical Strategy

## 4.1 Data

We obtained two carpooling datasets from Blablacar.The period of observation is from January 1st 2021 to the end of 2022 because this period witnessed several changes, increases, decreases and the abolishment of 0.25 increments, etc.Besides,in terms of data granularity, we include almost 3 million rides of 180 routes in France which represents most carpooling rides in France.
Overall, we have these variables as follows:
Supply Side: Price per seat, Seats offered, Commission, Anonymized driver ID,Date of publishing a ride, Date of departure, City of departure, City of arrival,Distance(km),Duration hours, Date of cancellation,etc.
Demand Side: Passenger ID, Date of sending Request, Hour of sending request,etc.
User Side: Date of signing up, Number of previous booking, Average rate of drivers, etc.

## 4.2 Quasi-Experiment Design

### 4.2.1 Experiment Setting

First, the commission was calculated and charged on the date of sending requests.Moreover,we assume that each passenger checks the Blablacar app at the end of the day to make sure that he has not missed any existing rides shown on that day.

### 4.2.2 Eligible rides

We focus on the rides published before the shock and departed after the shock.2 shows eligible rides that we are interested in our study. For each eligible ride, it is possible to be inactive because the ride is fully booked and no longer reserved or deleted.
To make our analysis more reasonable, we propose these following assumptions:
1.Drivers are not aware of the commission shock in terms of timing and the scale of the commission.However, drivers may discover the total price once the ride is published, and immediately modify the price level (pass through) but they will not be able to modify afterwards.
2.Potential passengers can send booking requests during the entire ”active” period of a ride, which can be before and after the commission shock.
3.Other drivers are free to enter and exit the market at all moment.
Based on these assumptions, we would like to control for a dynamic market where we are able to observe each active ride’s activeness, price, requests received, and seats booked at each date of observation $t$.

### 4.3 Preliminary Empirical Strategy

We propose this preliminary model to estimate the impact of commission shock on trip popularity:

$$\begin{aligned} Y_{it} = \beta_0 + \beta_1 SHOCK_t + \beta_2 P_i + \beta_3 C_{it} + \beta_4 BookingShare_{it} + \beta_5 DaysAhead_t \\ + \beta_6 N_{jdt} + \beta_7 AvgPrice_{jdt} + FERoute_j + FEDepDate_d + FE_t + \varepsilon_{it} \end{aligned} \tag{1}$$

- For each route $j$ departing on date $d$
  - $Y_{it}$: Number of requests received by ride $i$ on date $t$
  - $SHOCK_t$: Equals 1 if the observation date is post the commission shock
  - $P_i$: Price set by the driver for ride $i$, not modifiable during the ride activation period
  - $C_{it}$: Commission level of ride $i$ at observation date $t$
  - $Bookings_{it}$: Number of seats booked divided by total number of available seats for ride $i$ at observation date $t$
  - $DaysAhead_t$: Number of days ahead of departure for each observation date $t$
  - $N_t$: Total number of offered rides on observation date $t$ for route $j$ departing on date $d$
  - $AvgPrice_{jdt}$: Average price of all offered rides on observation date $t$ for route $j$ departing on date $d$

# 5 Future Steps

- The impact of the commission shock on driver pricing pass through
  - Compared to drivers who publish rides before the shock, those who publish after the commission increase/decrease may have a higher chance to lower/higher the price right after discovering the true commission level
  - Coexistence of complete vs. incomplete pass through: which one is better and for who?

# References


Fabra, N. and Reguant, M. (2014). Pass-through of emissions costs in electricity markets. *American Economic Review*, 104(9):2872–2899.

Shaheen, S., Cohen, A., Bayen, A., et al. (2018). The benefits of carpooling.