

## Incentives and the use of a collaborative application of mobility: A field experiment on the Saclay's area

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How can we get people to adopt behaviors based on collective interest, such as carpooling or telecommuting to alleviate daily congestions? Despite obvious advantages in terms of time or money saving, such behaviours are still scarce (Chan et Shaheen, 2012). This observation highlights the limit of classical approach of transport in economics (Shuldiner and Shuldiner, 2013). A behavioral approach seems essential for progress in this issue. Indeed, two central dimensions are missing today in the debate on mobility: i) these daily practices address the social dimension of the individual, and ii) its ability to represent the collective issues. Urban planning studies and traditional economic approaches of mobility make scarce reference to these dimensions.

The mechanisms of *crowding-in* and *crowding-out* (commitment and defection) studied by Frey (1994) and the distinction of monetary, extrinsic and intrinsic motivations are indeed of particular interest. Ryan and Deci (2000) distinguish intrinsic motivations (due to the implementation of the action itself) and extrinsic motivation. A well-known example of this mechanism comes from Titmuss (1970). In his book "the gift of relationship" he suggested that paying blood donors would remove all social and humanitarian reasons for this action and that the result would be a decrease in the number of donors. *Crowding-in* is the opposite mechanism. By activating the intrinsic part of the motivation, the reward gets a higher result, beyond its expected value.

We tested these hypotheses through a field experiment on the Saclay's area (25Kms south of Paris, France). This area hosts the emerging University Paris-Saclay that gathers private and public research centres and educational organisations. We chose this place because it is quite hard to access to it and to move from one organisation to another. We recruited participants on the Saclay's area (180 of which 65 have been active) who have to use the Mobidix application during 4 consecutive weeks (without any non working-day). The Mobidix application has 3 main functionalities: i) users can report the transport mean they used and/or the quality of their travel, ii) a Twitter-like communication system allows users to broadcast information about traffic or ask/propose car-sharing, iii) a directory of users is available, and iv) users can change their settings (nickname, contact information, etc;). During the recruitment process, we present the application as an experiment about creating a barometer of the traffic in the area (thanks to the reported information on travel quality). Once the experimentation started, we tested the impact of collective vs. individual and non-monetary vs. monetary incentives on users. These incentives were introduced regularly through new available features on the application (ranking, badge, CO<sub>2</sub> savings, contest with monetary reward, etc.). Each new feature was announced to users via e-mail.

During the experimentation, we observed a negative impact (*crowding-out*) on the use frequency of the application of incentives that rely on competition, whether the reward was symbolic (ranking) or monetary (€50 or €100). Collective feedbacks such as traffic barometer or CO<sub>2</sub> savings have positive effects (*crowding-in*) on the use of the application. Moreover, we observed a positive effect of social identity (organisation of the Saclay's area) activation. These *crowding-in* and *crowding-out* result only from the behaviour of a sub-population of users that seem to be very sensitive to incentives (positive and negative), and do not result from homogeneous behaviour of all users.

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