

Title: Learning from app-based feedback on driving skills: do monetary incentives matter?

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Research question

An over-proportionally large number of car accidents is caused by novice drivers. In this study, we investigate whether and how car drivers who recently obtained their driving license react to app-based feedback on their driving skills, and whether learning effects due to the feedback mechanism are enhanced by providing monetary incentives for safe driving behavior.

Methodology

We conduct a field experiment among ca. 500 Austrian drivers who have obtained their driving license within the past two years. Participation is voluntary. In return for taking part in the experiment, each participant receives a device capable of calling emergency services autonomously in case of an accident (worth ca. 50 Euro), and is eligible for participating in a lottery at the end of the experiment (with an overall payout of 5000 Euro). Participants are obliged to fill in two surveys focused on socio-economic and travel-related characteristics, as well as risk aversion.

Each participant goes through a 1-month pre-measurement phase, in which no feedback is provided, a 2-month treatment phase, and a 1-month post-measurement phase, in which again no feedback is provided. The participants are randomly assigned to one out of three treatment groups:

- **Group 0:** no feedback (control group); chance of winning in the lottery is independent of driving skills
- **Group 1:** app-based feedback; chance of winning in the lottery is independent of driving skills
- **Group 2:** app-based feedback; chance of winning in the lottery is dependent on driving skills

In the treatment phase, Groups 1 and 2 receive detailed feedback from a dedicated smartphone app, which collects telematic data. For each car trip, the driver receives an aggregate score reflecting his/her driving skills, as well as more detailed sub-scores on indicators such as speed, acceleration, cornering, braking, mobile phone usage while driving. In all other phases (and for Group 0 also during the treatment phase), the scores are computed but not shown to the participants.

We employ advanced econometric modeling techniques for analyzing the data resulting from the field experiment. We use the score assigned by the app as a proxy for the ability to drive safely. The goal is to identify variations in the score between the three groups, as well as to control for other determinants of the score (including a time trend that reflects learning effects that would also have occurred in the absence of the app-based feedback). Moreover, we control for self-selection into the field experiment (due to the voluntary participation)

using survey data comparable to those collected among the participants of the field experiment for a representative sample of Austrian drivers.

Expected results

We expect the detailed feedback provided to participants of the field experiment to enhance driving skills, and hence to improve road safety. The learning effect is expected to be augmented among those who receive monetary incentives for safer driving behavior. Self-selection may be present with respect to various characteristics, including technical affinity and risk aversion.

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