Driver motivation & psychology

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Traffic safety

- Societal costs
  - 40,000 fatalities per year in EU
  - 3.5 million injured
- Individual safety (SWOV, CBS)
  - 1 lethal accident in 285 million km
Cause of accidents: behavior

› Errors, lapses
  • Non-volitional
  • Driver fatigue, mobile phones

› Violations
  • Often volitional
  • Risk-taking

› Violations need specific interventions

› Why do people take risks?
Operant conditioning & driving

> Behavior ⇔ Consequences
> Experience = learning consequences
> Risk-taking is reinforced, safe behavior is punished

The A-B-C of Behavioural Learning
Illusion of control

- Illusion of control disrupts risk-perception
  - Throwing dice (Langer, 1975)
  - Lotteries
- Prominent in young men
- Type of car
  - SUV > citycar
- Relevant in driver training
Optimism bias

- My driving is better than average
  - Majority agrees
- Too positive about own skills
- Optimism bias & sensation seeking
- Prominent in young men
Behavioral adaption

› Safety gains compensated by increased risk-taking (Wilde et al., 1982; 1984)
› Mixed evidence
  • Yes: Road lighting and wider roads
  • No: Helmets, safety belts
Enforcement

> Sanction probability > sanction size

  - Government
  - Laserguns
  - Radars
Current interventions

- Effective, but limited
  - Safety technology: Behavioral adaption
  - Enforcement: Only locally effective
  - Education: Cognitive biases
- GPS-based PAYD insurance
Payd field experiment

» Discount (50 euros/month) on insurance fee for
  - not speeding (more time to react, less speed variance, reduced severity)
  - reducing driving volume
  - avoiding driving on dangerous hours
Research design

› GPS monitoring
› Incentive + delayed feedback
› ‘Ideal’ experiment
  • Random allocation to control or experimental group
  • Pre & Post measurement
Payd field experiment
Payd field experiment

Bolderdijk, Knockaert, Steg, Verhoef (2010)
Payd field experiment
Lessons

› Effects
  › 14% overall decrease in speeding
  › Change in driving style, not volume
  › No change in habits
  › Presence of monitoring device (Hawthorn effect)

› Implementation
  › GPS is not 100% reliable
  › Privacy not an issue to participants
Maximize impact of PAYD

› Is economically feasible incentive large enough?
  • Non-linear relation with incentive size
  • Non-monetary incentives (demerit points)

› Additional interventions:
  • instant feedback (e.g. Hultkrantz & Lindberg)
  • facilitate behavior change
  • moralization
End

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