



Pay as You Speed, ISA with incentives for not speeding: Results and interpretation of speed data

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ABSTRACT

To simulate a market introduction of Intelligent Speed Adaptation (ISA) and to study the effect of a Pay as You Speed (PAYS) concept, a field trial with 153 drivers was conducted during 2007–2009. The participants drove under PAYS conditions for a shorter or a longer period. The PAYS concept consisted of informative ISA linked with economic incentive for not speeding, measured through automatic count of penalty points whenever the speed limit was exceeded. The full incentive was set to 30% of a participant's insurance premium. The participants were exposed to different treatments, with and without incentive crossed with informative ISA present or absent. The results showed that ISA is an efficient tool for reducing speeding particularly on rural roads. The analysis of speed data demonstrated that the proportion of distance driven above the speed where the ISA equipment responded (PDA) was a sensitive measure for reflecting the effect of ISA, whereas mean free flow speed and the 85th percentile speed, were less sensitive to ISA effects. The PDA increased a little over time but still remained at a low level; however, when ISA was turned off, the participants' speeding relapsed to the baseline level. Both informative ISA and incentive ISA reduced the PDA, but there was no statistically significant interaction. Informative reduced it more than the incentive.

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1. Introduction

1.1. Incentive ISA

Over the past two decades, several studies have reported positive effects on drivers' speed by installing Intelligent Speed Adaptation (ISA) equipment (see Carsten et al., 2008; Vlassenroot et al., 2007; Regan et al., 2006; Warner, 2006; Várhelyi et al., 2004; Biding and Lind, 2002 for ISA studies). The previous studies have provided proof of concept and contributed to development and refinement of the technologies that have pushed ISA forward from being a bright, though brittle, idea to being a mature safety technology close to market introduction. A few studies have tested various forms of recording ISA. Peltola et al. (2004) tested recording ISA on taxi drivers, using log data to give personal feedback to drivers about their speeding. In Belonitor (2009) participants could earn points by complying with speed limits and subsequently exchange the reward points for rewards. The rewards were indoor or outdoor experiences: active, cultural, sporting or simply relaxing. Participants also competed with each other every month to win the

First Prize: a reward of 500 Euros. Hultkrantz and Lindberg (2009) gave participants a fixed monthly bonus which was subsequently reduced in proportion to the participants' speeding.

1.2. Pay as You Speed (PAYS), the General Idea

The study reported in this article, the Danish "Pay as You Speed" (PAYS) project, was based on the positive experience of previous ISA studies including the Danish INFATI project, which was a predecessor of PAYS (Lahrman et al., 2001). However, the PAYS project was different from previous studies in its scope in that it was planned as a large-scale simulation of a market introduction of ISA equipment for private cars. With this perspective it was an obvious idea to combine the more attractive but less efficient (Päätaalo et al., 2001; Dahlstedt, 2002) informative or advisory ISA equipment (Carsten and Tate, 2005) with a conditional discount on car insurance premiums. The cooperating partner, the insurance company "Topdanmark", set a 30% discount rate for participants in the PAYS project. The project name: "Pay as You Speed" refers to the close linkage of three factors: ISA equipment, driver behaviour and incentive for not speeding. From a market introduction perspective, young drivers were an obvious target group. Due to their high accident rate, young drivers pay high car insurance premiums and would therefore gain more than other drivers from having

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