

Fuel Panics

insights from spatial agent-based simulation

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This paper uses computer modelling to understand better one of the most difficult energy policy problems in recent years – a fuel panic. British motorists have twice experienced severe such crises in recent years. The first occurrence was in September 2000. It was prompted by a wave of protests against rising fuel prices. The second occurrence had no proximate cause in the petroleum supply chain; it was prompted merely by political rhetoric concerning the possibility of future supply problems.

The paper makes use of spatial agent-based simulation. The most important agents in the model represent motorists driving their cars in a simulated environment containing points of origin (i.e. homes), destinations (i.e. places of work) and petrol stations. The simulation comprises a simple, but sufficient physical model of the environment, a psychological model of the agents and a social network.

The model replicates the onset of panic and the consequences for the supply chain. It also reveals the intended and unintended impacts that can be expected to follow from policy maker interventions. The role of policy messages, and of imposed fuel rationing, are considered in detail. The simulations are not intended to be predictive, rather it is intended that they reveal phenomena that might occur in real world situations. In some cases, and to a first impression, some of these phenomena can appear to be counter intuitive. One example is the recurrence of problems ('aftershocks') after fuel normal supplies have been restored and the crisis might appear to have passed.

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