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Maximizing the number of informed citizens may not maximize societal benefits

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In evaluation of weather service provision often the standard assumption is applied that the higher the number of informed citizens, the better the societal benefits. This assumption is however only correct, if the incited response to (more) weather information does not (notably) affect the use of other scarce resources.

In transport for example, the transport network is a scarce good, and if the response induced by weather information is significant, the resulting change in the spatiotemporal distribution of travelers may increase rather than decrease aggregate time loss for the entire set of considered travelers. This is similar to the wandering peak problem in electricity systems in which peak shaving policies are pursued.

Apart from impacts of aggregation to maximum warning effectiveness warning uncertainty and significant regret cost of activity cancellation can explain why individuals don't respond to warnings or rather knowingly bet.

We illustrate with an agent based simulation of transport demand (MATSim) for greater Zurich and with a WSCA model for net information benefit assessment that the optimal number of informed travelers is often well below 100%, depending the network characteristics, the available choice set for travelers, and their individual attitude toward this kind of information. The insight gained is crucial for policy makers as it allows laying down and deploying optimal warning strategies in case of extreme weather events.