



The Economics of Recommender Systems: Evidence from a Field Experiment on MovieLens

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We conduct a 6 month field experiment on a movie-recommendation platform to identify if and how recommendation systems affect consumption. We use within-consumer randomization at the good level and elicit beliefs about unconsumed goods to disentangle exposure from informational effects. We have three experimental groups: (a) control, (b) exposed, and (c) recommended + exposed goods where only goods in (c) are recommended and we elicit beliefs about goods in (b) and (c). Comparing across these treatment arms we find recommendations increase consumption beyond its role in exposing goods to consumers. We provide support for an informational mechanism: recommendations affect consumers' beliefs, which in turn explain consumption. Recommendations reduce uncertainty about goods consumers are most uncertain about and induce information acquisition. Finally, we find evidence for spatial correlation in beliefs.

These results have important implications for policy and societal considerations surrounding these systems. First, a large theoretical literature has spawned motivated by antitrust considerations of such systems in digital markets. Our results highlight that the informational role played by such systems is first-order in modeling their impact and for evaluating policy interventions. Second, the documented spatial correlation in beliefs suggests the importance of dynamics in evaluation not just in terms of algorithmic confounding, but also in terms of an analogous feedback loop on the consumer side. In particular, our results imply that recommendations impact current consumption, which reduces uncertainty about similar goods, thereby increasing the probability of consuming these in the future. Thus, when measuring the effects of policy interventions it is important to characterize not just their immediate impact, but also the future changes on consumption, especially where recommendation is optimized not only consumer welfare.

The full version of the paper is available as a technical report at <https://arxiv.org/abs/2211.14219>.

Keywords: Recommender Systems; Information Acquisition; Field Experiment.

CCS Concepts: • **Applied computing** → **Economics**; • **Information systems** → *Collaborative Filtering*.

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