Estimating View-Through Ad Attribution from User Surveys Using Convex Optimization

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Abstract : In Digital Marketing, robust quantification of View-through attribution (VTA) is necessary for evaluating channel effectiveness. VTA occurs when a product purchase is aided by an Ad but without an explicit click (e.g. a TV ad). A lack of a tracking mechanism makes VTA estimation challenging. Most prevalent VTA estimation techniques rely on post-purchase in-product user surveys. User surveys enable the calculation of channel multipliers, which are the ratio of the view-attributed to the click-attributed purchases of each marketing channel. Channel multipliers thus provide a way to estimate the unknown VTA for a channel from its known click attribution. In this work, we use Convex Optimization to compute channel multipliers in a way that enables a mathematical encoding of the expected channel behavior. Large fluctuations in channel attributions often result from overfitting the calculations to user surveys. Casting channel attribution as a Convex Optimization problem allows an introduction of constraints that limit such fluctuations. The result of our study is a distribution of channel multipliers across the entire marketing funnel, with important implications for marketing spend optimization. Our technique can be broadly applied to estimate Ad effectiveness in a privacy-centric world that increasingly limits user tracking.

Keywords : digital marketing, survey analysis, operational research, convex optimization, channel attribution
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