

## **Multivariate Visual Diffusion for Social Groups**

We are interested in the role that visual (social) identity plays in product adoption. How does the type of people who own and are seen to own a particular product/service influence others' likelihood of purchase? For example, might men be less likely to buy a sporty coupe automobile if they observe lots of women are driving it? Might these cross-group effects be more likely in certain car categories as opposed to others?

To address these questions, we have acquired data on over 26 million automobiles sold throughout the U.S. from January 1999 till January 2008. We use Bayesian probability models to identify whether the adoption of a given make and model by one social group can be explained “visually” by previous adoption by another social group. Furthermore, much extant research suggests that social contagion is a local phenomenon (that is, an individual's purchase decision for a given product depends in part on whom else he actually sees using that product) — “you cannot be affected by what you cannot see” — hence, we incorporate local visual spatial effects in our model.

In addition, we are able to determine how these patterns vary across both geographic areas as well as across makes, models, and categories of cars. Finally, since our main hypotheses surround visual diffusion, we relate the degree of local visual diffusion to correlates (e.g. density, sunny days, etc.) that represent visual diffusion potential and its interaction with visual diffusion “ability”, income (the means to purchase).