



# Will They Come and Will They Stay? Online Social Networks and News Consumption on External Websites

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## Abstract

This study explores the role of online engagement, homophily and social influence in explaining traffic and news consumption by social network users at an external news website. The authors jointly model visits and page views for a panel of users who registered with the news site using their Facebook accounts. In their model, the authors account for homophily using a latent space approach, and account for endogeneity, heterogeneity, and unobservable correlates. The results show that measures of an individual's activity on Facebook are positively associated with that individual's actions at the news site. In addition, knowing what a user's Facebook *friends* do at the content website provides insights into a focal user's behavior at that website, as visitors with friends who visit external news sites are more likely to visit the news website studied. In addition, news consumption (not just visits) also depends on friend's actions but such an impact varies with the individual's underlying browsing mode. We highlight the importance of social influence in news consumption and further show that homophily bias in news consumption is similar to prior research in other categories. Our study also highlights that visitors' past browsing patterns are important predictors of future content consumption, although social network information significantly improves prediction beyond the effect of such more traditional behavioral metrics. Finally we find that Managers can use readily available data for both prediction and targeting.

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## Introduction

In the past few years, the market has witnessed the development of online social networks and their rise as one of the most influential online forces. With over a billion users engaging with sites like Facebook and Twitter, it is clear how important these media are for creating connections and communicating with customers. Social media can also provide benefits beyond engagement and advocacy, and businesses are fast recognizing the power of “social media analytics” that rely on ever more data tracking user actions. Sentiment analysis based on such data is now used to predict the outcome of elections (Golbeck and Hansen 2011; Tumasjan et al. 2010), success of movies at the box office (Asur and Huberman 2010; Rui, Liu, and Whinston 2013), marketability of consumer goods (Shimshoni, Efron, and Matias

2009), and even stock performance (Bollen, Mao, and Pepe 2011). Practitioners also use social media data to analyze customer satisfaction by gauging the impact of competitive marketing campaigns (Bradbury 2013).

The power of social networks lies in information users provide about themselves, their preferences, their “friends”, and the influence friends exert on each other. Because network friends could be interested in the same products (e.g. homophily; McPherson, Smith-Lovin, and Cook 2001) social advertising, social targeting, and social customer scoring on platforms like Facebook have revealed great potential (Goel and Goldstein 2013; Hill, Provost, and Volinsky 2006). As online groups and communities that revolve around brands become more visible and easy to monitor, they attract greater interest from businesses because of the strategic opportunities they provide (Libai et al. 2010). As a result, today, online social networks (and notably Facebook) collect significant amounts of information and provide platforms that businesses can harness to implement strategies like social advertising and community development.

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Despite the importance practitioners attach to social network analysis and social media use, there is currently a dearth of academic studies in marketing that illustrate the value of online social network data in targeting and predicting behavior of connected individuals *outside* the network (Goel and Goldstein 2013). More importantly, online content consumption at third-party external websites has largely been over-looked in social media studies, despite social networks being inherently platforms to share content, making them simultaneously complementary and competitive entities. The neglect by researchers is even more surprising given that the online content sector supports, directly and indirectly, a significant portion of economic activity online and the flourishing global online advertising with spending over \$100 billion (E-marketer 2013).

Among companies whose business models revolve around content provision, news websites are facing some of the most significant challenges. As 46% of social network users discuss news stories (Anderson and Caumont 2014), online social networks have been progressively making inroads into the news delivery business. Snapchat's introduction of news and content distribution is a good example, as are Facebook's continuous improvements in news hosting. As a result, news websites and organizations are ever more focused on trying to understand how consumers interact with news, at news sites or while visiting social media platforms, to develop subscription plans and increase the visibility of their content (Mitchell, Jurkowitz, and Olmstead 2014). Similarly, the ability to predict traffic and engagement at content sites using the browsing behavior of social network members is of financial relevance as it can lead to better placement of ads and content (Lerman and Hogg 2012).

To benefit from the prominent role of social networks, news websites encourage their readers to engage with news by registering using their social network accounts. In the case of Facebook pages, this stimulates interaction among group members, peer-to-peer sharing and greater visibility of news in users' Facebook newsfeed. It also gives businesses the access to a rich set of personal information including what users post and reveal on their personal pages, and the identity of their friends. Such information could help the selling of premium targeted ads and it may provide the opportunity to understand how connected individuals interact with external sites and whether peer-to-peer interactions (including news sharing) result in positive or negative effects on news reading. However, there is currently a dearth of studies trying to link social network activities and content consumption at external websites. Most of the existing studies, whether aggregate or disaggregate, are survey based (e.g., Bernoff and Li 2011) and often provide contradicting results depending on the methodology used and data employed (e.g., De Waal and Schoenbach 2010; Dimmick et al. 2004; Nguyen 2010; Tewksbury 2003).

As a result, it is not entirely clear to content providers how valuable the information they collect from Facebook is in predicting user behavior at their website, including traffic and page requests. This is an important issue for content websites, whose ad revenues depend directly on the traffic and on the page views they are able to generate. Finally, little research has focused on online content providers and their users, as most

studies of online social media tend to be focusing on movies (Dellarocas, Zhang, and Awad 2007), games (Zhu and Zhang 2010), micro-lending (Stephen and Galak 2012), and books (Chevalier and Mayzlin 2006). With this work, we not only study the relationship between news reading and online social network activity (more specifically activity on Facebook), we further contend that the potential impact of Facebook on news consumption relies on a series of complex mechanisms, and that the net effect depends on how active friends are, and on how active the focal user is on social networks. Drawing on the communications research, we outline that personal and social goal fulfillment could explain the association between users' engagement with Facebook and news sites, as well as the influence of connected social network peers.

We focus our analysis on two browsing decisions: (1) a user's decision to visit the content website, and (2) the decision on how many pages to view. These variables are frequently monitored due to their direct bearing on the revenue generated by news sites, 80% of which relates to advertising placement on their pages (Clemons, Gu, and Lang 2002). Ours is the first study to combine Facebook data from a panel of Facebook users registered with a major news website with browsing activity at the third party news site to jointly model website visitation (traffic) and the number of pages viewed over time (engagement) at the news website.

We adopt a flexible modeling approach using a random-coefficients Poisson Hurdle model to find associations between behavior at news sites and at online social networks. We distinguish between users' *own* activity and the impact of users' *social* network peers, and in doing so we also carefully separate the role of social influence and homophily in driving news consumption of Facebook users at external sites. Our paper also contributes to research on the role of groups formed around a focal brand within social networks (e.g. Libai et al. 2010). In doing so we help managers understand the role of these groups in predicting and understanding the behavior of users while visiting brand sites.

Our results show that Facebook-related information can help predict site visits and number of page requests. We are able to improve the predictions from already extremely accurate models that use individual-level browsing data at the news site. Strikingly, browsing information from friends provides greater improvements in prediction than knowing the individual's own behavior at the online social network. This shows that information on the behavior of connected friends, the essence of social networks, is the information one can extract from online social networks that provides the greatest benefits.

In addition, news consumption and being active on Facebook appear to be complementary. Our results further suggest that engagement with online social networks could be associated with specific patterns of news consumption and site visits as individual-specific motivations and characteristics make both behaviors (i.e., the use of social networks and news reading at external sites) more likely. More importantly, our findings confirm that online news consumption is a shared experience, with new consumption activity of social network friends associated with similar behavior by other network members.

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