Seventeen U.S. states do not allow alcohol advertising, an effort to curb the social ills of underage drinking, drunk driving, and alcohol abuse.

But with the freewheeling, unregulated style of Internet advertising, might it all be in vain? Might advertising bans on alcohol and other controlled products—tobacco, medication, gambling—have backfired?

New research from Catherine Tucker, Douglas Drane Career Development Professor in Information Technology and Management and associate professor of marketing, finds that online alcohol advertisements are most effective in states that ban boozy billboards and transit ads.

“We found that in states that banned billboard alcohol advertising, people are 8 percent less likely to say that they will buy alcohol—but for consumers exposed to online advertising, this gap narrows to 3 percent,” Tucker said. “Online alcohol ad campaigns are much more effective in states with offline alcohol ad bans than in states without such bans.”

There is a lesson in this that goes beyond regulated industries. The popular multichannel advertising campaigns of the early Internet age, in which online advertising was tailored to complement traditional advertising, may have been ill advised. Online ads, it turns out, can substitute for traditional advertising altogether.

That has big implications,” Tucker said.

“In this new world of advertising, firms can easily get around state or local advertising regulations by using the Internet to reach people in those places,” she said. “Online advertising undermines the ability of local governments to control what their residents see and do not see. Firms that aren’t allowed to advertise offline will do it online, and the message will get through irrespective of the channel. This also means that people who are beginning to argue that Google has monopoly power in the online advertising world are asking the wrong question. They should be asking whether Google has monopoly power over advertising in general.”

“Advertising Bans and the Substitutability of Online and Offline Advertising,” a paper by Tucker and Avi Goldfarb, associate professor of marketing at the Rotman School of Management at the University of Toronto, was published this year in Journal of Marketing Research.
Advertising Bans and the Substitutability of Online and Offline Advertising

Advertising regulation is widespread. There are full or partial bans on marketing communications in many industries, including alcohol, pharmaceuticals, video games, gambling, tobacco, and legal services. The existence and severity of these restrictions varies by country, state, and city. They often date from a time when local restrictions on advertising could be expected to have a binding effect on the types of advertising that the local population encountered. Today, widespread use of the Internet means that a firm’s potential customers may encounter advertising content online that a local government has enacted laws to restrict.

This study examines how the effectiveness of online ad campaigns for alcoholic beverages changes when there are restrictions on offline advertising. By examining differences in advertising offline exposure that are not due to firm-level advertising decisions, we can also shed light on whether online advertising substitutes for or complements offline advertisements. To measure the effectiveness of the online ad campaigns, we use data from a large-scale set of field experiments that randomized exposure to online display advertisements of alcoholic beverages. These field experiments involved asking 61,580 U.S. Web users about purchase intent for alcoholic products, covering 275 campaigns for different products on different Web sites from 2001 to 2008. For each of these campaigns, a mean of 223 people completed the survey; approximately half these respondents were randomly exposed to an advertisement for an alcoholic beverage, and the others were exposed to an alternative placebo advertisement.

We contrast how exposure to online advertising affects purchase intent in locations that place restrictions on out-of-home advertising with locations that do not. We do this in two ways. First, we compare the 17 states that regulate out-of-home advertising such as billboards, storefront signage, and transit advertisements with the 33 states that do not regulate such advertising for alcohol. Table 1 provides descriptive statistics that foreshadow our core findings. Among those who did not see the online ad campaign, the percentage of respondents very likely or likely to purchase is 2.04 percentage points lower, or relatively 8 percent lower, in states with advertising bans than in those with no advertising ban. The relative difference in purchase intent between states with and without an advertising ban narrows to 3 percent after advertising exposure. We interpret this to suggest that online advertising reduces the effectiveness of offline advertising bans. This interpretation relies on the assumption that there is no systematic difference in alcohol ad effectiveness.
between states with and without bans. In the complete article, we conduct a wide battery of tests to show that the pattern in Table 1 holds with thorough econometric analysis. We check that there were no systematic differences in the kind of advertisements that people saw or in the demographics of people who saw the advertisements across states with and without offline advertising bans. We show that the results are robust to allowing the effect of exposure to advertising to vary with a variety of state characteristics, such as alcohol consumption; alcohol abuse; and alternative state regulations that restrict the sale, consumption, and marketing of alcohol. We also show that there is no similar effect for other consumer packaged goods categories.

The analysis of state-level regulations provides a large sample understanding of differences between places with regulation and places without them. However, as we suggested previously, there still may be systematic differences in how people in states with advertising bans respond to alcohol advertising that are not related directly to the ban. Therefore, as a second empirical approach, we examine changes in four local regulations that provide a natural experiment on advertising regulation because they were either enacted or rescinded during the period for which we have data. Specifically, we study a 2003 ban on out-of-home alcohol advertising in Philadelphia, a 2004 elimination of a ban on college newspaper alcohol advertising in Pennsylvania, a 2007 increase in enforcement of an alcohol advertising ban on San Francisco public transit, and New York City’s 2007 withdrawal of a self-imposed ban on hard liquor advertisements on broadcast television.

The changes in local regulations complement the state-level results by relying on the weaker identification assumption that the changes in online alcohol advertising’s effectiveness in a given location are due to changes in offline advertising rather than location-specific changes over time in online alcohol advertising responsiveness. This assumption is particularly plausible because one Pennsylvania regulatory change increased offline advertising regulation and the other decreased regulation, but both show that more regulation of offline advertising translates to more effective online advertising. Our estimates of the effect of offline advertising bans are reasonably similar, despite the much smaller sample sizes and specificity of local regulatory changes.

Crucially, for firms, we also show that the disproportionate effect of online advertising in places with advertising bans is related to levels of product awareness. Online advertising for products that have low levels of awareness is particularly effective in places with out-of-home advertising bans. In contrast, for products that have high levels of awareness, there is little difference in online advertising effectiveness between places with and without bans. This suggests that online display advertising has an informative role for people in places with out-of-home advertising bans. In addition, it provides some support for the results being driven by diminishing marginal effectiveness of advertising goodwill because high-awareness products are already at the point of steep diminishing returns.

Also important for firms is the implication that Internet advertising substitutes for offline advertising. Our setting enables us to identify how offline advertising relates to the effectiveness of online advertising. This is valuable because usually it is difficult to separate the effects of offline and online advertising campaigns, given that both are launched at the same time. Alvin Silk, Lisa Klein, and Ernst Berndt emphasize in “The Emerging Position of the Internet as an Advertising Medium” that “[the Internet] looms as a potential substitute or complement for all of the major categories of existing media and appears capable of serving a wide range of communications objectives for a broad array of advertisers.” This matters because it is not clear whether the unique capacity of the Internet to target and interact with users means that it extends and enhances existing external advertising campaigns or acts as a substitute for them.

### Table 1

<table>
<thead>
<tr>
<th>Out-of-home advertising bans</th>
<th>Exposed</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>NO</td>
<td>28.88</td>
<td>31.01</td>
</tr>
<tr>
<td>YES</td>
<td>26.84</td>
<td>30.18</td>
</tr>
</tbody>
</table>
Our finding that online display advertising is a substitute for offline display (primarily billboard) advertising contributes to an increasing literature in marketing that explores the relationship between offline and online environments for customer acquisition, brands, word of mouth, purchases, customized promotions, ad pricing, search behavior, and price sensitivity. We believe ours is the first study to empirically investigate consumer substitution between online and offline advertising.

More generally, our results provide an expanded framework with which to understand the effectiveness of online advertising. Most of the literature has focused on measuring the effect of advertising exposure and clicks. We contribute to this literature by emphasizing that the effectiveness of online advertising cannot be considered independently from the availability and feasibility of offline media.

Previous research has discussed the difficulties of tailoring local regulations to the Internet era in the areas of gambling, tobacco, and prescription drugs. However, there has been little systematic empirical work on the Internet's influence on the effectiveness of existing local regulation outside tax policy. This dearth of empirical research extends to marketing regulations. Our results suggest that advertising restrictions are less effective when locals are able to access the Internet. Prior research has used aggregate nonexperimental data to show that partial advertising bans have negligible effects on total alcohol consumption, arguing that advertisers' substitution between advertising channels plays a role. In "Media Substitution in Advertising: A Spirited Case Study," Mark Frank also suggests that advertisers may substitute print, television, and radio advertising channels for one another. Our research provides evidence of a related mechanism that renders advertising bans less effective: When one channel is blocked, the alternative channels become more effective. In the case of an out-of-home advertising ban, there may be little effect on overall customer consumption because the ban makes advertising in the nonregulated media outlets more effective. With the advent of the Internet, Web sites whose servers lie outside the ban's jurisdictional boundary provide a persistent alternative advertising outlet, and therefore it seems likely that this mechanism for rendering partial advertising bans ineffective will persist.

Our findings suggest that the Internet reduces the ability of local authorities to restrict the effect of advertising on the local population. Although the type of substitution we document has been possible previously, never before has there been a media channel that is so pervasive and that has the ability to reach a local population outside its political borders. As Manuel Castells (2001, p. 168) notes in The Internet Galaxy: Reflections on the Internet, Business, and Society, "The Internet decisively undermined national sovereignty and state control" of the flow of information to the state’s residents. Not only are governments unable to regulate access to online advertising, but our results indicate that the absence of offline advertising actually increases the effectiveness of online advertising.

...it is not clear whether the unique capacity of the Internet to target and interact with users means that it extends and enhances existing external advertising campaigns or acts as a substitute for them.

Reprinted with permission from Journal of Marketing Research, published by the American Marketing Association, Avi Goldfarb and Catherine Tucker, Volume 48, Number 2, April 2011, pp. 207–222.