### Title
Destination Categories, Store Choice, and Beer Distribution Laws

### I want to submit an abstract for:
Conference Presentation

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### Keywords
beer distribution, retailing, difference in difference models, regulation

### Research Question
We study how the introduction of full strength beer into supermarkets in Colorado affected consumer purchases of various food categories.

### Methods
We employed a difference-in-difference model using both Nielsen RMS and Consumer Household Panel data to estimate the impact of introducing beer into grocery stores in 2019.

### Results
Our results show that grocery store revenues increased when beer became available in grocery stores in Colorado; we also found increased sales of produce, cheese, deli meat, and milk.

### Abstract
Categories differ in terms of their relative ability to attract customers to stores. The key to identifying such champion categories, however, is not just the ability to determine what consumers like, but the strength of
complementarity with other categories in the store. Studying this issue empirically, however, is bedeviled by the problem that there are rarely ever categories that are entirely new. We are constrained by the available data to study relationships among existing categories, in existing stores, with the usual marketing-mix activities to attract customers to categories, and stores. Econometric identification is therefore weak conceptually. In this paper, we leverage a change in alcohol distribution laws in Colorado that took effect in 2019 that allowed full-strength beer to be sold alongside other retail food categories for the first time to cleanly identify the destination-category effect in supermarkets.

Our objective is to test whether beer serves as a destination category for supermarket retailers in drawing customers away from retailers that traditional held a monopoly over selling full-strength beer: Liquor stores. Although beer is our focus, we use it as an example of a more general concept, the relative importance of any category’s ability to serve as a destination category. In that sense, the example of introducing beer represents the rare case of a natural experiment in category-introduction as a means of testing for the more general destination-category effect.

There are many dimensions to the broader destination-category question, which provides a rich setting for a broader analysis of channel-choice and basket-spending by households. To that end, we have four primary research questions: (1) How does the introduction of a new category of products affect total-store sales, presumably drawn from other channels (liquor stores, in our case) where the category was previously available, (2) What is the role of category-complementarity in driving any increase in store sales that derives from category-introduction, (3) What is the underlying mechanism, at a household level, that drives the destination-category effect, and (4) How does the introduction of a new category affect purchase incidence (frequency, or interpurchase time) and total-basket purchases at a household level?

We use the beer-distribution example to make a more general case for how high-value categories can have complementary effects throughout the store. Stores lose due to the space they have to reallocate to the increased-distribution of beer, but gain due to new traffic drawn from other channels, sales of potentially-higher margin items, and potentially-larger baskets. We use the exogenous introduction of regular-strength beer as our case-study, but our findings inform other strategic changes by retailers, perhaps introducing high-quality private labels, additional in-store services, or other strategic elements that are intended to drive inter-category volume. In this paper, we take advantage of a policy-induced change in category structure in order to estimate a simple model of category and store performance.

If a change in merchandising causes a substantial re-allocation of spending among stores, then it is likely to have substantial welfare effects on consumers who are able to buy their preferred products at the same store or, on the other hand, are induced to visit more stores on each shopping trip in order to take advantage of compelling category-level attractors at something other than their preferred store.

We use a reduced-form, treatment-effect econometric approach to test our primary hypotheses. We study the impact of adding a category using both store-level scanner data, and household-level consumer panel data. Specifically, we estimate our model using the Kilts /Nielsen consumer panel and store-level scanner data sets, for the years 2017 - 2019, for households and stores in Colorado (treatment) and in Arizona and Minnesota (control).

Because we are not particularly interested in the choice of brand, we analyze this problem from three different levels: (1) retail channel, (2) individual retail grocery store, and (3) beer-purchasing households. At the channel level, we consider the retail-channel share of total beer spending, while at the store level we study how the introduction of full-strength beer affects sales revenue at the level of the individual store, and how the weekly revenue from each of the top 10 categories in a given store are impacted by the introduction of full-strength beer. In order to understand how these changes arise, we also study the problem from a household perspective, and examine how beer-purchasing households behavior changed as a result of introducing full-strength beer into the grocery channel.

To ensure that our identification strategy is as clean as possible, we abstract from any identification that may derive from functional form, and use a difference-in-difference (DiD) strategy that explains the change in each dependent variable as a function of retailer, household, or temporal fixed effects, store-and-market covariates, marketing-mix variables, household demographics, and the impact of the change in beer-distribution regulations as a treatment variable. For our household-level analysis, we use a triple-difference approach, and exploit the additional dimension of difference between beer-purchasing and non-purchasing households as an additional source of identification.

We find strong statistical support for the destination category effect. Specifically, we find that introducing regular-strength beer in supermarkets lead to roughly 1.1% greater weekly sales revenue in the top 10 grocery
categories in treated stores relative to control. Disaggregating this effect into categories that appear to be strongly associated with beer sales, we isolate specific categories that appear to be the source of much of the gains in store revenue. At the household level, we find that the underlying mechanism behind the rise in store-level sales is more complicated than the simple destination-category story would suggest. Instead of increasing basket size directly, we find that the introduction of full-strength beer led treated (beer-purchasing households) households to shop more frequently and, in fact, purchase smaller baskets on each trip to the store. However, the smaller basket effect was more than compensated by a lower interpurchase time (2 days less between store visits, or purchase incidence). More frequent, yet smaller purchases lead to a roughly 3.5% rise in total spending in the grocery channel by treated households. Again disaggregating the household effect on a category basis, we find again that much of this destination category effect comes from the apparent complementarity of beer with fresh produce, cheese, and deli. Importantly, however, we find considerable heterogeneity in both the store- and household-level effects. In other words, beer serves as a destination category to differing degrees across stores, and in different ways across households.

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